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Railway Age

SECOND HALF OF 1918—No. 16 SIXTY-THIRD YEAR

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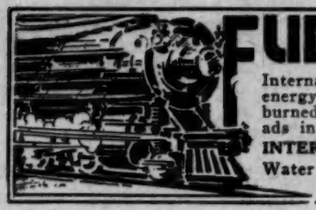

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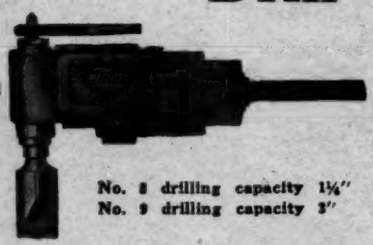
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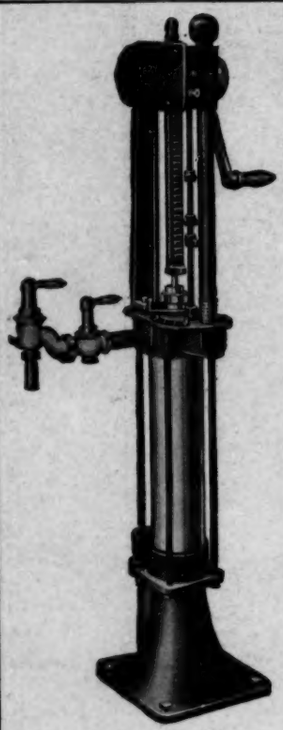
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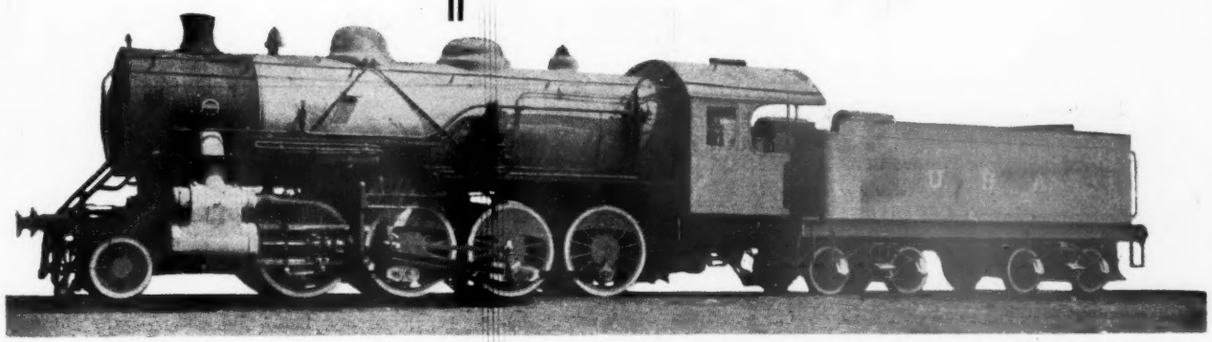

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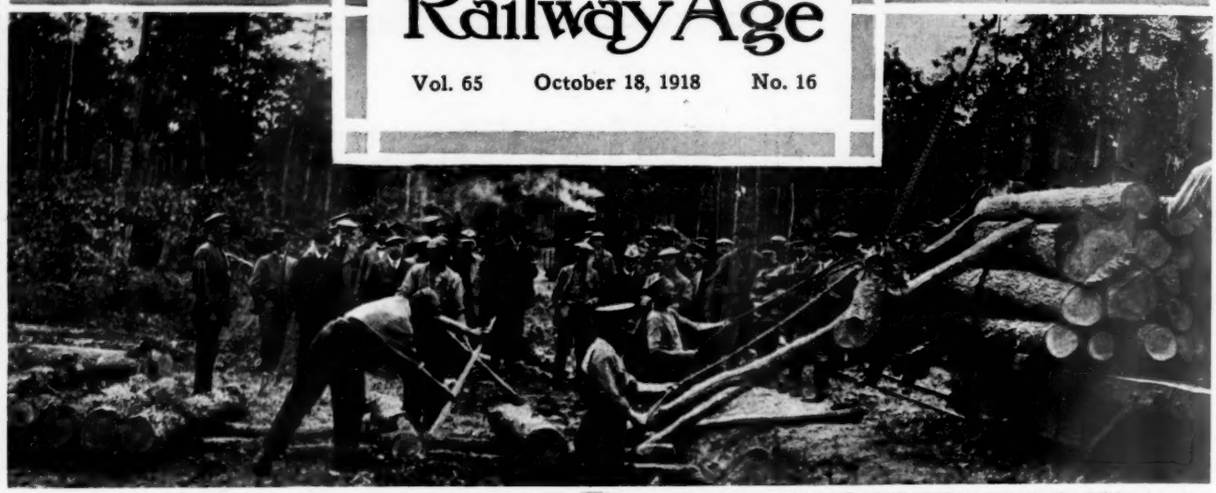
Railway Age

Vol. 65 October 18, 1918 No. 16



Canadian Journalists in France Inspect the Canadian Forestry Detachment. Canadian Official Photo

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EDITORIAL

Railway Age

The statement was recently made by a railroad officer that "this is no time to bother about the instruction of apprentices, or of giving special instruction to employees in the various departments." Is this right? Was there ever greater need for the introduction of intensive educational methods, or of added supervision on the railroads? Hardly! It is a serious mistake to assume that these things are not essential. It will pay, and pay well, to take capable workers who can act as instructors off of productive work and use them to instruct and help those who lack in experience and skill. The increased and improved output of the small group under such instruction will be much greater than the individual output of the instructor, no matter how good a workman he may be—that is, if he has the faculty of imparting his knowledge to others. It may not be advisable to develop elaborate and extended courses of study, such as might be used to advantage in normal times, but there is no good reason why boys, new employees, and older employees who can be fitted for larger responsibilities should not receive intensive practical instruction along the lines in which they are weak or deficient. Young men who are receiving technical instruction for the aviation department are said to receive the equivalent of a college course in a few months. Something of a similar nature must be developed in the various departments of the railroads.

Intensive Training a Necessity

The title of this editorial was also the title of an individual paper presented before the American Railway Master Mechanics' Association convention in 1910 by the late W. C. Hayes, who for many years was superintendent of locomotive operation on the Erie. A few men who have occupied similar positions have recognized that education was essential to increased fuel economy, but the cost of fuel was so low, and it was so easy to get, that comparatively little was done on most roads to develop an adequate system of instruction, either among the engineers and firemen or among the various other classes of employees that have to do with fuel economy, directly or indirectly. For the same reasons comparatively little encouragement was given to the development and introduction of fuel saving devices until the limit of size was reached by the modern locomotives and it became necessary to adopt other measures to increase their capacity. It is true that more attention was at the same time given to the supervision of those who handled and used the fuel, but only to a limited extent. Now that the question is not how much money can be saved, but how much work can be gotten from each pound of fuel; and when coupled with this we have the absolute necessity of increasing the operating capacity of the transportation machine to a maximum, the situation takes on a very different aspect. The fuel conservation section of the Division of Operation of the Railroad Administration is pointing the way. What is needed is intelligent attention and co-operation on the part of all those who can help in any way—and this means at least a large proportion of the employees of the operating and mechanical departments.

Education an Essential of Fuel Economy

The table d'hote system established by the Railroad Administration on dining cars has now been in effect a few weeks and we believe that from the standpoint of the public it is a success, and an improvement over the a la carte system which it displaced. We have had considerable experience of the meals served and in all cases they have been good, and especially good for the small price of one dollar which ordinarily is charged for them. Looking at the matter from the standpoint of the Railroad Administration, it seems very doubtful whether it can continue to serve such good meals at this low price without incurring an even larger loss than was suffered by the railways when using the a la carte system. Now that the Railroad Administration has adopted the table d'hote system we suggest that it take another step and follow the European practice of issuing tickets to those desiring to take meals in the diners, the tickets giving the number of the table and the exact hour at which the guest will be served. The introduction of this ticket system would reduce or completely abolish the waiting in line at the door of the dining car, which is now necessary on many crowded trains. It is probable that with the table d'hote system and the insurance of tickets, as suggested, it would become possible materially to reduce the number of servants that it is now necessary to employ on dining cars. Some people think that the American people would resent the adoption of the ticket system, but we believe that after they got used to it they would like it.

Table d'Hote System in Practice

Attention has previously been called in these columns to the fact that the increase in the minimum wage to 58 and 68 cents an hour in the car and locomotive departments, respectively, with no proportionate readjustment of piecework rates has sounded the death knell of piecework as an effective means of building up the output of each individual employed. The indications are that the results foreseen have been fully realized. The situation thus brought about is especially serious in the car department where probably a considerably larger proportion of the output is paid for on a piecework basis than in the locomotive department. While the increases in the minimum wage have undoubtedly increased the desirability of employment in the equipment maintenance department, the fact remains that it is practically impossible to secure an adequate supply of labor in the face of a shortage affecting practically every industry in the country. Furthermore, in the car department the removal of all restraints upon the movement of foreign cars has increased the aggregate amount of car repair work, at least in certain sections of the country, and everywhere has increased the difficulties encountered in keeping up the output of repaired cars. Winter is coming, when the need for an expeditious turnover of the cars on the repair tracks as well as the dif-

Effectiveness of Piecework Should Be Restored

ficulties of accomplishing this end will be increased. To secure anything like an adequate output the incentive of the piecework system will be needed sorely. A readjustment of piecework rates may still be effected in time materially to add to the defenses of the railroads to meet whatever the winter may have in store.

Is This Necessary to Winning the War?

GOVERNMENT OPERATION of railways was adopted solely as a measure for helping win the war. That this was its only purpose was specifically stated by Congress in the Railroad Control law. It would have been easy to have raised the question as to whether many things which have been done by the administration in operating the railways were really intended to help win the war or to perpetuate government operation. This question may be raised still more forcibly regarding the propaganda relative to government operation which is being carried on by different departments of the government.

We shall give two recent examples. Oscar A. Price formerly was private secretary to Director General McAdoo and recently was appointed assistant to the director general. Under date of October 5 the New York Times, the St. Louis Republic and other newspapers published an interview which Mr. Price had been especially delegated by Mr. McAdoo to give. After discussing the question whether railway employees are more discourteous to the public under government than they were under private operation, Mr. Price continued, (the italics being our own):

> "We have the positive intention that never again shall any American railroad, at least while under the present management, *revert to the conditions of a by-gone era when 'public be damned' policies prevailed.* Personally, I feel sure that the vast majority of the 2,300,000 railway employees in this country feel at the present time that they are more on their mettle than ever. In talking with them in all sections from coast to coast I come to the unmistakable conclusion that, as a body, they are determined to make the present test of government control and operation a success. It is but natural that this should be so—*they never fared so well under private control and operation as they are faring today. Their prospects for the future were never so bright as they are now. I am sure that they are more anxious to obey, not only the letter, but the spirit of all orders issued by the director general than they ever could have been to obey the orders of their respective previous executives.* . . .
>
> *"Railroad employees are not devoid of a knowledge of politics, as their past record proves. They are thoroughly aware that if government operation and control are to become permanent they must prove a success now.* They are now on trial, and their success or failure, to a large extent, is in the hands of the 2,300,000 employees."

Two points stand out prominently in the statements quoted from Mr. Price. First, he refers to the "public be damned" policy which, he alleges, formerly prevailed, and puts stress on the fact that railway employees "never fared so well under private control and operation as they are faring today." Almost every man now giving his services in an important capacity in the operation of the railways was in that "by-gone era" the manager of a railway. This includes all the regional directors and most of the directors of divisions of the Railroad Administration. They could enlighten Mr. Price as to some important respects in which the public was better served in that "by-gone era" than it is now. They could show him that the reason why the railway companies refrained from doing many things that are being done under government operation was that the government under private operation prohibited these things from being done. They could make clear to him that the railway companies could not have advanced wages so prodigally as is now being done because they had not the power to advance rates which the Railroad Administration possesses and is exercising. The question we started to raise, however, was whether Director General McAdoo considers it essential as one means of winning the war to employ Mr. Price and others to thus cast aspersions upon the way in which the railways were operated under private control by the very men who are now loyally serving him in important positions.

Another point which stands out prominently in Mr. Price's statements is his unmistakable intimation that government operation may be made permanent and his obvious bid for the support of railway employees in the effort to make it permanent. The employees are better off now than ever before; "their prospects for the future were never so bright." Therefore, they should do everything they can to make government operation a success in order to insure its permanence. This is the line of reasoning adopted. Any reference to the fact that railway employees ought to do all they can to make government operation a success *in order to help win the war* is conspicuous by its absence, although this form of appeal is constantly addressed to railway officers. Is it necessary as a means of winning the war for the Railroad Administration to carry on propaganda among railroad employees for permanent government operation of railways?

The Committee on Public Information, another government department, is not satisfied to let the propaganda for government management be carried on solely by the Railroad Administration. It has just sent out to the press some material regarding the railroad problem which it calls "The Official Facts." It begins its presentation of "The Official Facts" by saying: "When the railroads of this country were taken under federal control they were suffering from the effects of a long period of various sorts of adversity. The measure of their recovery under government management has now been put into figures by Mr. McAdoo, the director general." The figures attributed to Mr. McAdoo do not seem, at first glance, to agree with those compiled by the Railroad Administration's own statistical bureau. For example, the Committee on Public Information says the number of tons hauled per train has increased 6.9 per cent. The increase in the first seven months of this year, over the same months of last year, according to the official statistics, was 2.6 and the increase in July over July, 1917, was only 5.7 per cent. The committee says the average carload has been increased 14.4 per cent. The increase in the first seven months of this year over the corresponding months of last year was only 7.9 per cent, and the increase in July over the same month of last year was only 10.3 per cent.

The truth is, however, that the committee's "Official Facts" are correct—that is, they are correct for *the single month of April.* Passing over all the other six months of government operation for which statistics are available, the Committee has just happened to use those of the one month which make altogether the best showing for government operation. But it says not a word to indicate that they are the figures for a single month! The committee says the eight-hour day has been granted to railroad employees. The eight-hour day has not been granted to a single class of railway employees, although the so-called eight-hour *basic* day has been granted in many cases.

The *Railway Age* found it necessary to point out in an editorial, entitled "Efficiency Under Government and Private Management" (issue for September 6), a large number of incorrect statements and deductions which had been made and distributed broadcast by Theodore H. Price, actuary of the Railroad Administration. Now comes the Committee on Public Information and distributes all over the country a lot of railroad statistics which, as used, are as misleading as was the article which Mr. Price wrote and circulated.

The *Railway Age* ventures to ask whether it is necessary as a means of winning the war for Oscar A. Price to carry on a propaganda among railway employees for permanent government operation of railways and for Theodore H. Price and the Committee on Public Information, in their official capacities to circulate misleading statistics all over the United States regarding the results of government operation. The Railroad Administration and the Committee on Public Information were created and are maintained by the public solely to help win the war. It is difficult to understand

how they can regard themselves as justified in carrying on propaganda for the obvious purpose of bolstering up the cause of permanent government operation when Congress in the Railroad Control law expressly provided first that the railways shall be returned to their owners 21 months after the declaration of peace, and second, that "this act is expressly declared to be emergency legislation enacted to meet conditions growing out of war, and nothing herein is to be construed as expressing or prejudicing the future policy of the federal government concerning the ownership, control or regulation of carriers."

The Big Problem of the Railroad Administration

IT IS GENERALLY ADMITTED that American railroads are a vital factor in the winning of the war. Conditions have been, and still are, such that but comparatively little can be secured for the railroads in the way of additional equipment and facilities. While government control has made it possible to pool facilities and thus secure greater use from them, it is evident that the transportation machine has been worked practically to the limit so far as these things are concerned in themselves.

The human factor still remains to be considered, however, and there are great possibilities of increased production if it is rightly handled. Under private management, with the smaller organizations and competitive conditions, there was a tendency for each road to try to give better service or make better records than its neighbor and this spirit of rivalry extended throughout the entire organization of many of the more important systems. This incentive is lacking under government control and unified operation. On the other hand strong appeals have been made on the grounds of patriotism and loyalty for greater co-operation and more effective work on the part of the employees — the term employees including, of course, both officers and men. It would appear, however, that much still remains to be done in building up a strong morale among railroad workers. The railroads are just as surely being used in the fight for democracy as the men in the trenches. So important is this question of morale in the army that General Pershing has estimated that a Y. M. C. A. secretary is equivalent to 10 fighting men. A high morale is just as vital on the railroads in the interest of the quick and successful winning of the war.

Supervision and leadership are tremendously important factors in any organization; but to be applied effectively they must be applied through the officers in direct contact with the men. There has been a tendency since the government took control of the railroads to discourage the officers and foremen. This has been far from the intention of those in authority, but it has been the result. Now, you can no more have a high state of morale on railways the officers of which, from federal manager down to foreman, are discouraged and dispirited than you can have morale in an army in which all officers from colonel down to corporal are dispirited and discouraged. One reason why the lower officers and the foremen have been discouraged has been that they have been relatively the worst paid men in the service and that the disparity between their compensation and that of many employees has been increased by recent wage advances in which many of the lower officers and foremen have not participated. Another reason has been a tendency on the part of the Railroad Administration to deal directly with the employees instead of dealing with them through their officers. No officer or foreman can get the best work out of men who are made to feel that they have little either to hope or to fear from him.

It is true that labor has been richly rewarded from the wage standpoint. It is true also that the loyalty of labor cannot be questioned; but nevertheless these men have watched the treatment of their superiors closely and the effect has been a breaking down in the morale that increased wages and other considerations cannot offset.

The situation is summed up by an officer of a road which for many years has been noted for the loyalty and efficiency of its employees.

> In fact, since the new wage went into effect, the labor situation has improved greatly because of so many men returning to us. The morale, however, is greatly lowered, efficiency greatly lowered, and loyalty and pride gone. To those of us who had a part in the upbuilding of the road during the past —— years, the change has been tragic.

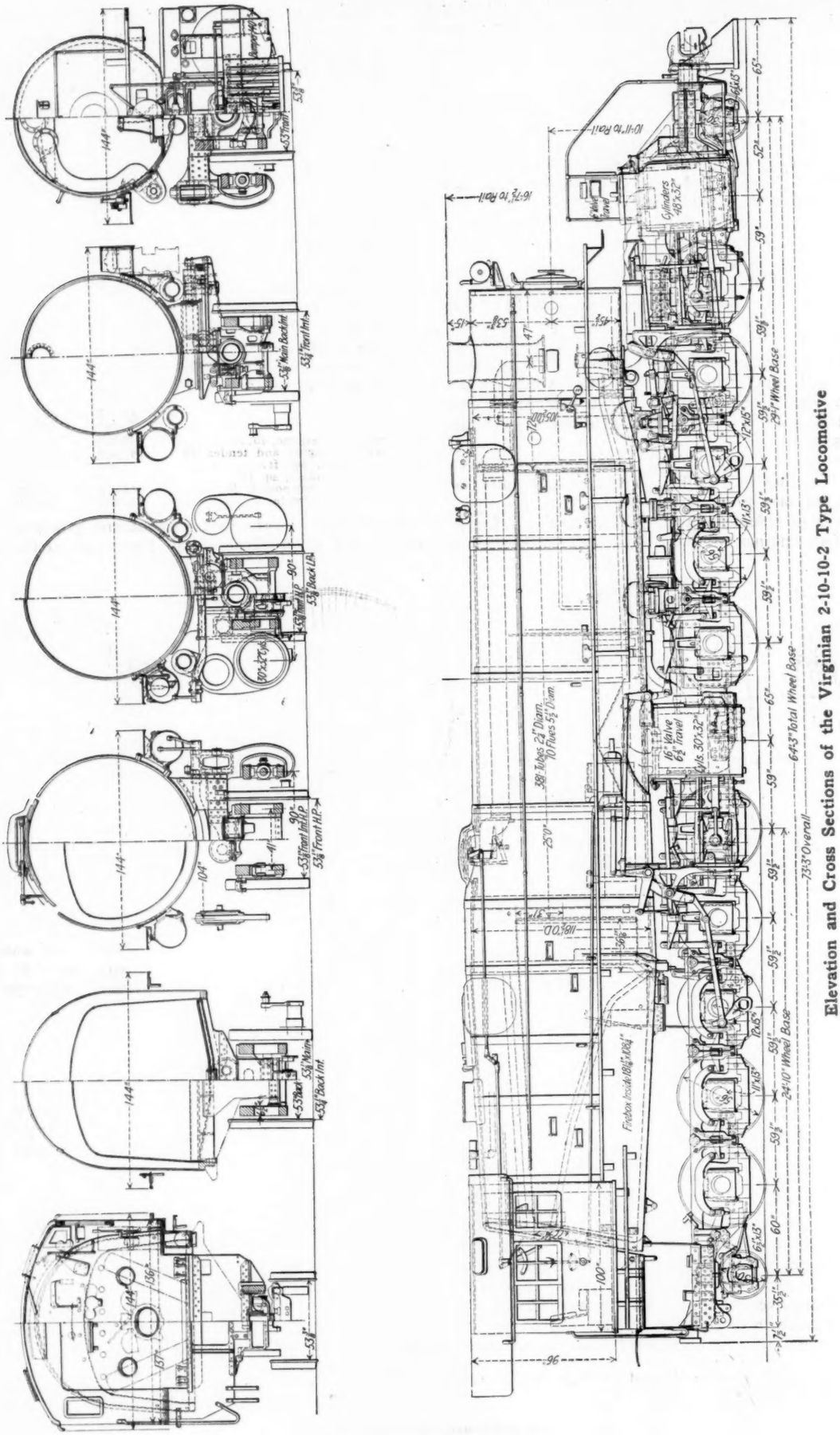
Further evidence of this breakdown in morale is indicated by the following incident which was recently reported to one of the regional directors. (Unfortunately, while it may appear to be an extreme case, observation would indicate that it reflects a condition which is more or less general.)

> The assistant roundhouse foreman was found in a semi-intoxicated condition. The general foreman took away from him a pint bottle which was half filled with whiskey. We found about seven men asleep, practically all of them laborers. In justice to the night roundhouse foreman, wish to say he discovered this condition and telephoned Mr. ———, asking him to come down to the roundhouse.
>
> One machinist helper was found asleep on an engine standing on one of the circle tracks. This machinist helper was a young man, exempted from the draft and was being paid forty-five cents per hour. I suggested to Mr. ——— the advisability of turning this young man over to the draft board, advising them he was a shirker and we had no further use for him; also suggested to Mr. ——— and Mr. ——— to have a list prepared of all employees at ——— whom they had exempted and give them to understand that if there were any more of them shirking in this manner they would be turned over to the draft board.
>
> I have cautioned our division officers about getting around a little more at night and know what is going on. I will also give this a little more personal attention.

Every railroad officer and employee, if he is a loyal American citizen, must do his full part in remedying this situation. It is something that cannot be done, however, by a mere issuing of orders, nor can it be accomplished without the development of a spirit of enthusiasm and morale that will require full co-operation and sympathy on the part of those highest in authority. The prime requisite is for an immediate and clear-cut recognition of the vital necessity of building up a high morale among the officers and men of our railroads. This is far more important than the comparatively meagre additions that can be made to facilities and equipment or to changes in methods and practices. It depends on giving a square deal to every officer and employee and of really encouraging each in his work and having a friendly interest in him. Secretary of Labor Wilson recently had occasion to summarize* the measures that are required in order to secure the highest efficiency from workmen. In closing this summary he said: "And more important than all of these is the spirit of co-operation of the man who believes he is being justly dealt with." The term "man" must include officers as well as workmen.

Develop this spirit of co-operation and then get the entire railroad organization interested in playing a game to see which section or department can make the best record in helping whip the Kaiser, and we shall not have to worry very much about the record of the railroads next winter. Unless this is done, however, America's participation in the great war may be seriously handicapped at the very time that the most will be expected from it.

* The Annals of the American Academy of Political and Social Science, July, 1918, page 72.



Elevation and Cross Sections of the Virginian 2-10-10-2 Type Locomotive

"Unconditional Surrender"

Heavy Mallet Locomotives for the Virginian

Built for Operation on Heavy Grades; Weight 684,000 lb.; Tractive Effort, Compound, 147,200 lb.

TEN MALLET LOCOMOTIVES having a tractive effort of 147,200 lb. working compound and 176,600 lb. working simple, are now being delivered to the Virginian Railway by the American Locomotive Company.* These locomotives were built to meet the problem of handling a constantly increasing volume of traffic on an exceptionally difficult section of railroad.

The portion of the line between Elmore and Clark's Gap on the Deepwater division, a distance of about 14 miles, has a grade for the last 11½ miles of 2.07 per cent with maximum compensated curves of 12 deg. For the first two and one-half miles the grade is .5 per cent. This 14 miles is all single track and includes five tunnels, which compel the use of an absolute block system. It is the crucial part of the entire system, as all the eastbound tonnage of the Virginian passes over it.

During the last 11 years Mallet locomotives have been employed in handling this traffic. The size and power of these locomotives have progressively advanced to keep pace with the growth in volume of traffic. The first installment consisted of four engines of the 2-6-6-0 type with tractive effort of 70,800 lb. Next in sequence were eight of the same wheel arrangement but with a tractive effort of 90,000 lb. The third installment consisted of one engine of the 2-8-8-2 type with a tractive effort of 100,800 lb. The fourth lot was six engines of the 2-8-8-2 type with a tractive effort of 115,000 lb.

At present, trains passing over the mountain section are operated by one 2-6-6-0 type Mallet road engine, with a tractive effort of 90,000 lb., at the head end and two 2-8-8-2 Mallet pusher engines, with a tractive effort of 115,000 lb. each, behind. The maximum tractive effort thus available is 320,000 lb. per train, which enables the handling of 4,500 tons in 60 cars having an average weight for car and load of 75 tons.

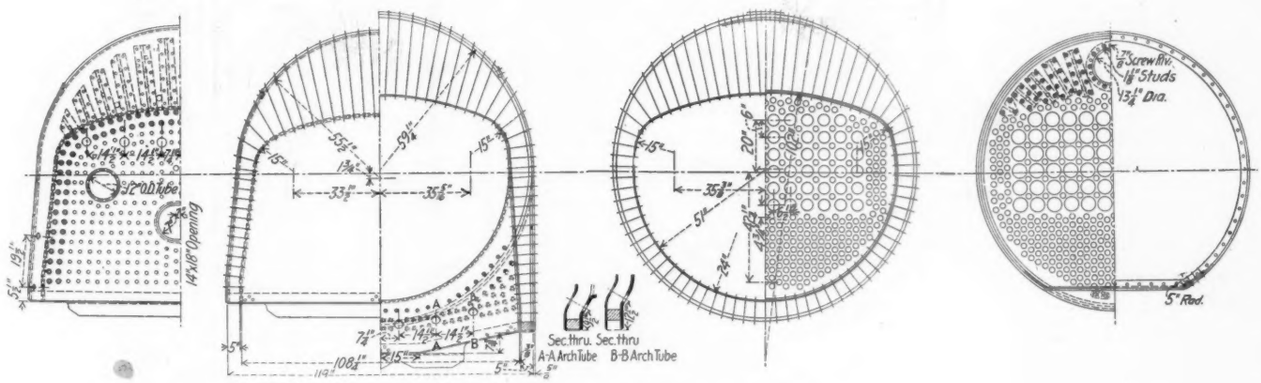
The traffic volume is still growing, and as the track is single, and as it is not desired to increase the number of engines on any train above three, it has been found necessary to put still larger locomotives into service. The unusually large locomotives under discussion were developed in order to accomplish this result.

Upon receipt of the new locomotives trains will be composed of one of the 2-8-8-2 Mallet engines having a tractive effort of 115,000 lb., a head and two of the new 2-10-10-2 Mallet engines, each having a tractive effort of 147,200 lb., behind, giving a total tractive effort for the train of 409,400 lb. This train will have a weight of 5,850 tons, the equivalent of 78 cars having an average gross weight of 75 tons.

The 2-8-8-2 type Mallets which will be used on the head end of the train were built by the American Locomotive Company in 1912 and 1913. At that time these engines were the most powerful locomotives in the world. The following comparison shows the extent to which these engines are exceeded in the new 2-10-10-2 type:

	2-8-8-2 Type.	2-10-10-2 Type.	Per Cent. Increase.
Total weight of engine, lb.....	540,000	684,000	26.6
Total weight, engine and tender, lb	752,000	898,300	19.5
Heating surface, sq. ft.....	6,909	8,606	24.5
Superheating surface, sq. ft.....	1,311	2,120	61.7
Tractive effort, compound, lb.....	115,000	147,200	28
Tractive effort, simple, lb.....	138,000	176,600	28

Apart from the enormous weight and power of the locomotive as a whole, some of the dimensions of the boiler are impressive as showing the extent to which the usual limits were exceeded in its design and construction. At the first course it is 105½ in. in diameter outside, while the outside diameter of the largest course is 112⅞ in. The barrel is fitted with 381 tubes 2¼ in. in diameter and 70 flues 5½ in. in diameter, 25 ft. long. A combustion chamber 36 in. long is included. The firebox is 181 1/16 in. long and 108¼ in. wide. The front portion of the firebox is included with the combustion chamber behind a Gaines fire-wall, so that the grate is about 144 in. long and has an area of 108.75 sq. ft. A total heating surface of 8,606 sq. ft. and a superheating surface of 2,120 sq. ft. are obtained.



Sections Through the Boiler and Firebox

The high pressure valves are of the piston type, 16 in. in diameter, while outside admission slide valves are used for the low pressure cylinders. Steam admission is controlled by the Chambers outside connected throttle and a Lewis reverse gear is used. Both the front and trailer trucks are of the Woodward type and the tender trucks are equalized. The design as a whole follows the builder's ordinary practice, differing from previous designs only in modifications made necessary by the increased size and capacity.

These engines were built at the Schenectady works and the contract called for delivery completely erected and

*The photograph of these locomotives appeared on page 623 of the October 4 issue of the *Railway Age*.

ready for service on Virginian tracks. The shipping arrangement required considerable planning before the various carriers could be convinced that they could safely accept and move via their lines, locomotives of such size and weight.

In preparing for shipment of large locomotives it is first necessary to submit diagrams showing the estimated height and width clearance dimensions, and the distribution of weights on each axle to the operating or engineering department of each carrier over whose line it is intended to route the shipment, in order to secure their agreement to handle it when offered to their line. If some projection exceeds the carrier's clearance limitations, an effort is made to meet the objection by removing that part, if possible, and reapplying it on arrival at destination. Or, if the weights are too heavy for the trestles or the bridges via a natural route, an effort is made to find a way to ship via a detour route.

These large locomotives presented an unusual problem. It was impossible to ship them completely assembled and moving dead on their own wheels. After the consideration of many plans, it was finally decided to leave the boiler on the frames but trimmed of all outside parts and projections. The cab, low-pressure cylinders, and some other parts were removed and the remaining skeletons with their tenders were shipped on their own wheels. Each locomotive required one flat, one gondola, and one box car to carry the loose and detached parts.

Authority was eventually secured for shipping in this manner although under special operating instructions and via detour routes. Each locomotive was accompanied by a messenger who had sleeping quarters fitted up in the cab which was loaded on a flat car. Approximately two weeks has been the actual running time from Schenectady, N. Y., to Princeton, W. Va.

The principal data and dimensions are as follows:

General Data

Gage	4 ft. 8½ in.
Service	Freight
Fuel	Bit. coal
Tractive effort, simple	176,600 lb.
Tractive effort, compound	147,200 lb.
Weight in working order	684,000 lb.
Weight on drivers	617,000 lb.
Weight on leading truck	32,000 lb.
Weight on trailing truck	35,000 lb.
Weight of engine and tender in working order	898,300 lb.
Wheel base, driving	19 ft. 10 in.
Wheel base, total	64 ft. 3 in.
Wheel base, engine and tender	97 ft.

Ratios

Weight on drivers ÷ tractive effort, simple	3.2
Weight on drivers ÷ tractive effort, compound	4.2
Total weight ÷ tractive effort, compound	4.6
Tractive effort, compound × diam. drivers ÷ equivalent heating surface*	699.4
Equivalent heating surface* ÷ grate area	108.4
Firebox heating surface ÷ equivalent heating surface,* per cent	4.4
Weight on drivers ÷ equivalent heating surface*	52.4
Total weight ÷ equivalent heating surface*	58.0
Volume equivalent simple cylinders	41 cu. ft.
Equivalent heating surface* ÷ vol. cylinders	287.4
Grate area ÷ vol. cylinders	2.7

Cylinders

Kind	Compound
Diameter and stroke	30 in. and 48 in. by 32 in.

Valves

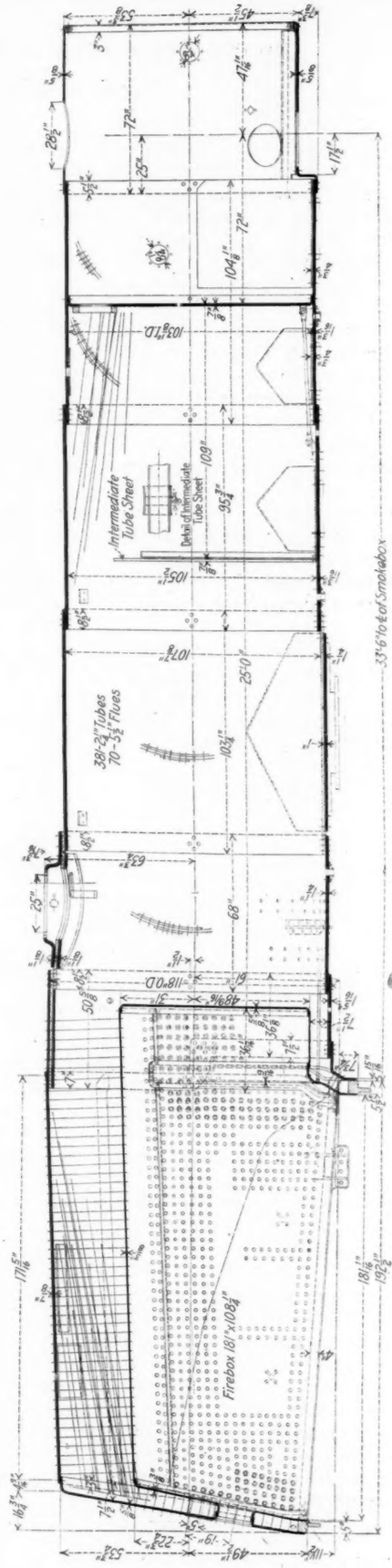
Kind	h. p. piston; l. p., slide
Diameter	h. p., 16 in.
Greatest travel	h. p., 6½ in.; l. p., 6 in.
Steam lap	h. p., 1 in.; l. p., 1⅛ in.
Exhaust clearance	h. p., ¼ in.; l. p., 9/16 in.
Lead in full gear	h. p., ⅛ in.; l. p., 3/16 in.

Wheels

Driving, diameter over tires	56 in.
Driving, thickness of tires	3½ in.
Driving journals, main, diameter and length	12 in. by 15 in.
Driving journals, others, diameter and length	11 in. by 13 in.
Engine truck wheels, diameter	30 in.
Engine truck, journals	6½ in. by 13 in.
Trailing truck wheels, diameter	30 in.
Trailing truck, journals	6½ in. by 13 in.

Boiler

Style	Ext. wagon top
Working pressure	215 lb. per sq. in.
Outside diameter of first ring	105½ in.
Firebox, length and width	181 1/16 in. by 108¼ in.



The Boiler for the Virginian 2-10-10-2 Type Locomotive

Firebox plates, thickness, all	⅜ in.
Firebox, water space	Front, 5½ in.; sides and back, 5 in.
Tubes, number and outside diameter	381—2¼ in.
Flues, number and outside diameter	70—5½ in.
Tubes and flues, length	25 ft.
Heating surface, tubes and flues	8,090 sq. ft.
Heating surface, firebox, including arch tubes	516 sq. ft.
Heating surface, total	8,606 sq. ft.
Superheater heating surface	2,120 sq. ft.
Equivalent heating surface*	11,786 sq. ft.
Grate area	108.7 sq. ft.

Tender

Tank	Water bottom
Frame	Cast steel
Weight	214,300 lb.
Wheels, diameter	33 in.
Journals, diameter and length	6 in. by 11 in.
Water capacity	13,000 gal.
Coal capacity	12 tons

*Equivalent heating surface = total evaporative heating surface + 1.5 times the superheating surface.

Doings of the United States Railroad Administration

Traffic Conditions; Wages of Shop Employees; Budget Instructions; Financing Equipment Purchases

WASHINGTON, D. C.

THE SUMMARY of traffic conditions issued by the Railroad Administration on October 9, is as follows:

Eastern Region:—The general movement of freight traffic continues heavy, but careful control has prevented any congestions or delays of a serious nature. Arrangements have been made for sending freight by water so as to utilize the boats to the greatest possible extent for the relief of the rail lines on the eastern coast. Passenger travel continues heavy with comparatively few complaints, and the congestions at ticket offices very much lessened. Sales of interchangeable scrip-books show a continued increase.

Pocahontas Region:—Passenger travel continues heavy and conditions at ticket offices satisfactory excepting one or two points due to shortage in force which it is hoped to overcome shortly. A patriotic meeting of coal operators in West Virginia promises good results at point of production. Grain situation at Newport News shows improvement.

Southern Region:—The citrus fruit crop of Florida is estimated at 7,200,000 boxes, or about 1,600,000 more than last year. Crop two weeks ahead and something under 100 cars already moved. It is reported that the citrus canker has been quite thoroughly eliminated. By conference with shippers, service on Florida perishables has been arranged. School for instruction of women ticket clerks showing good results. Operation of ticket offices satisfactory. Passenger travel heavy, particularly to the Southeast and to points west through the St. Louis and Cincinnati gateways.

Central Western Region:—Grain permit system continues to work satisfactorily. Permits freely issued for shipments of lumber. Re-routing reports show saving of 16,582 car miles. School for women ticket sellers opened at Chicago October 1. Ticket offices consolidated at Omaha October 1, an estimated annual saving of $42,500.

Southwestern Region:—The general service uninterrupted, and both freight and passenger traffic well taken care of. Oil loading for the week totaled 11,028 cars.

War Department:—Frozen beef movement and transportation conditions generally satisfactory. Continued shortage of open top cars in South and Southeast for war department lumber.

Navy Department:—Transportation situation generally satisfactory. Still some shortage of equipment in the South for lumber which is being handled with Car Service Section. Fewer and smaller accumulations of cars at navy yards.

Fuel Administration:—Car supply uniformly good in the East. Some accumulation on B. & O. and need of power on C. & O. Tidewater: Vessel supply ample. Lake situation: Good, ample supply of coal at docks and dumping increased. Southern region: Some car shortage in Birmingham district and in Southwest Virginia. Coke: Car supply good.

Fuel Administration, Oil Division:—Some complaint as to slow movement in eastern territory which is being taken up for improvement. Mid-continent field shows increased loading and sufficient supply of tank cars.

Food Administration:—Decreasing complaints as to movement of fresh meats and packing house products, showing improvement in service. Live stock movement good except difficulty in moving sheep in the central west, which is receiving attention. Grain moving satisfactorily and permit system being carefully handled. This plan to be extended to the eastern interior markets. Good grain movement from seaboard. General situation as to perishables good and decrease in number of complaints as to express situation.

U. S. Shipping Board:—Small accumulations at numerous yards which are being given active attention and general situation good. No complaints as to lack of transportation.

Traffic Executive of Allies:—Reports generally good but by reason of decrease of freight at ports, request faster movement from the interior, which matter will receive attention.

War Industries Board:—Improvement in the new facilities being handled carefully. Number of large projects recently authorized. War Industries Board aiding in disposing of individual accumulations of cars with a view to avoiding individual embargoes.

General:—Movement of troops continues in a satisfactory manner.

The change in dining-car table d'hote meals took effect October 1 and the reports received indicate that the service meets with the approval of majority of travelers. The Bureau of Suggestions and Complaints has already received several letters commending the service and none in criticism. All the reports indicate that the service will be a success.

Very active attention being given to estimates of the fall fruit and vegetable crop and the prospects that the unification of the refrigerator equipment under the Chicago office will result in a much better car supply.

Live stock receipts at Chicago show a very large increase particularly in sheep and hogs; the first increasing about 100 per cent over last year and the second about 50 per cent.

American Iron and Steel Institute states that all available furnaces with the exception of one located at Milwaukee now in operation. No complaints as to transportation.

There were handled for export through various sea ports, for the week ending October 3, 7,167,000 bushels of wheat, an increase of 4,078,000 over preceding week. In addition to the wheat movement, 1,950,000 bushels of other grains were shipped. This free movement from the seaboard will, of course, relieve the interior.

The lake boats of the U. S. R. A. are moving flour and feed from the Northwest in heavy volume.

The Conservation Division of the War Industries Board, with whom we are working closely, reports that its instructions to drygoods retailers and wholesalers and knit goods manu-

facturers, will effect an estimated saving of 17,312 freight cars per annum.

Financing of Equipment Purchases

Methods of financing the purchase of cars and locomotives ordered by the Railroad Administration and allocated to the various railroads were discussed with Director General McAdoo and other officers of the Railroad Administration on Monday by a committee representing the Railway Executives' Advisory Committee, including T. De Witt Cuyler, chairman of the committee; Howard Elliott, chairman of the Northern Pacific; Julius Kruttschnitt, chairman of the Southern Pacific; L. F. Loree, president of the Delaware & Hudson, and Alfred P. Thom, counsel for the committee. When the government placed orders for 100,000 freight cars and 1,315 locomotives it was understood to be the intention of the government to own them during the period of federal control and to make some arrangement for their acquisition by the railroads afterward, but it was later decided to require the railroad companies to pay for the equipment under the authority granted by the railroad control act. Under this plan cars have been allotted to railroads which are already furnishing cars to other lines and object to buying more to be used generally.

At the conference with the director general the committee of railway executives expressed reluctance on the part of the railroad companies to pay for this equipment, the cost of which on orders already placed amounts to $76,873,355 for locomotives and $289,460,000 for freight cars. They asked why the Railroad Administration could not pay for the cars from its revolving fund. The orders were placed at the very high figures caused by this year's prices for labor and materials and the railroad companies could not hope to derive any revenue from their use except interest on the cost during the period of federal control and it was stated that some companies would be unable to pay for the equipment allotted to them or in some cases even the initial 25 per cent payment under a car trust plan. There has also been objection on the part of some companies to the standard types of equipment as being unsuited to their requirements.

The federal control act appropriated the sum of $500,000,000, which, together with funds available from any operating income of the carriers, may be used as a revolving fund "for the purpose of paying the expenses of the federal control, and so far as necessary, the amount of just compensation, and to provide terminals, motive power, cars and other necessary equipment, such terminals, motive power, cars and equipment to be used and accounted for as the President may direct and to be disposed of as Congress may hereafter by law provide." It also provides that the President "may make or order any carrier to make any additions, betterments or road extensions and to provide terminals, motive power, cars and other equipment necessary or desirable for war purposes or in the public interest or in connection with the property of any carrier; that it may from the revolving fund advance to such carrier all or any part of the expense of such additions, betterments or road extensions and to provide terminals, motive power, cars and other necessary equipment," such advances to be charged against such carrier and to bear interest at a rate and payable on such terms as may be determined by the President. The executives urged that the equipment be financed in accordance with the first of these provisions rather than the second, but Director General McAdoo indicated that the revolving fund was intended to be used more for extraordinary expenditures required for war purposes than for such ordinary expenditures as equipment. He finally requested the executives to confer with a committee of officers of the Railroad Administration, Walker D. Hines, Carl R. Gray, R. S. Lovett, John Skelton Williams and Henry Walters, in an effort to work out a practical plan of handling the matter.

Up to August 31, according to the monthly report of the division of capital expenditures, $13,879,226 had been expended for locomotives ordered by the Railroad Administration, and $24,152,476 for cars ordered by the administration.

Interpretation of Order Increasing Wages of Shop Employees

Director General McAdoo has issued the following interpretation No. 3 to General Order No. 27, and to Supplement No. 4, Addenda Nos. 1 and 2, Interpretation No. 1 and Amendment No. 1 thereto:

METHOD OF APPLYING INCREASES TO PIECEWORKERS.

ARTICLE I.

(*a*) The increases provided for in General Order No. 27 apply to each hour worked and not to piecework prices per item or operation.

(*b*) Overtime hours, prior to August 1, 1918, will be paid for at the rate in effect as of December 31, 1917, and up to and including July 31, 1918; from August 1, 1918, at the rate of one and one-half times the average straight time hourly piecework earnings for the current pay period, provided that the straight time piecework earnings plus one-half additional, equals the guaranteed minimum at the hourly rate of one and one-half time.

(*c*) Any increase in wages due to increased rates of compensation granted between January 1, 1916, and December 31, 1917, shall be deducted from the amount of increase provided for in General Order No. 27, but in no case shall such deduction operate to reduce earnings based on rates in effect as of December 31, 1917.

(*d*) In the absence of established standard hourly rates for any one or more of the seven classifications designated in Supplement No. 4, the going rate in each craft in accordance with the classification existing prior to the application of Supplement No. 4 for mechanics or helpers at each point on each of the several railroads, shall be used as the base rate to which will be added the increases provided for in Section C, Article II, General Order No. 27.

(*e*) *Example* 1.—Assume that in Yard B, 75 wood freight car builders or repairers are employed, the base hourly rates in December, 1915, were:

15 at 32 cents per hour.
31 at 33 cents per hour.
17 at 34½ cents per hour.
12 at 36 cents per hour.

Thirty-three cents thus becomes the going rate for the basis of computing the hourly increase for all wood freight car builders or repairers in Yard B. General Order No. 27, Article II, Section C, using the going rate of 33 cents, establishes a rate of 46.75 or 13.75 cents increase over the December, 1915, hourly rate. Between January 1, 1916, and December 31, 1917, increases amounting to 9 cents per hour had been put into effect. The net increase established by General Order No. 27 is therefore 4.75 cents per hour to hourly workers, and represents the total increase per hour to pieceworkers of the same class in Yard B. The same method of procedure will apply to each of the respective groups of employees, such as upholsterers, coach carpenters, cabinetmakers, passenger or freight steel car body builders or repairers, truck builders or repairers, coach painters, locomotive painters, locomotive carpenters, molders, coremakers, electricians, signal men and signal maintainers, tinners, pipe fitters, coppersmiths, sheet metal workers, and all men classified and used as helpers.

(*f*) Where piecework rates or pieceworkers received no increase between January 1, 1916, and December 31, 1917, it is evident that the average earning rate was sufficiently in excess of the hourly rate to cover any increases that may have been granted hourly workers. In determining the increase to such pieceworkers, they shall receive the same increase per hour as accrues to the hourly worker under General Order No. 27, illustrated herein by example 1, paragraph *e*.

(*g*) The application of increases to machinists, boilermakers and blacksmiths, who are on the piecework basis, shall be as above outlined (see example 2) except where the establishment of the minimum rate of 55 cents per hour is less than the increase provided for in Section C, Article II, General Order No. 27, in which case the greater increase will apply. (See example 3.)

(*h*) *Example* 2.—In December, 1915, machinists in Shop C were paid a going rate of 35 cents per hour. Section C, Article II, General Order No. 27, establishes a rate of 49.50 cents per hour. This would automatically go to the minimum rate of 55 cents per hour, or 20 cents increase over the December, 1915, hourly rate. Between January 1, 1916, and December 31, 1917, increases amounting to 9 cents per hour had been put into effect. The net increase established by General Order No. 27 is therefore 11 cents per hour to hourly workers and represents the total increase per hour to the machinists on piecework in Shop C.

(*i*) *Example* 3.—In December, 1915, machinists in Shop D were paid a going rate of 42 cents per hour. The new rate provided for in Section C, Article II of General Order No. 27, is 58.25 cents per hour, making an increase of 16.25 cents per hour over the December, 1915, hourly rate. Between January 1, 1916, and December 31, 1917, increases amounting to 9 cents per hour had been put into effect. The net increases established by General Order No. 27 is therefore 7.25 cents per hour to hourly workers, and represents the total increase per hour to the machinists on piecework in Shop D.

(*j*) If the increases for pieceworkers under General Order No. 27, added to their average hourly straight time piecework earnings, by pay period, do not equal the minimum hourly rates established for hourly workers of the same class, the back pay due such pieceworkers, by pay periods, January 1, 1918, to July 31, 1918, inclusive, will be computed on the basis of the minimum hourly rates applicable to the respective classes, as per Supplement No. 4.

(*k*) *Example* 4.—Pieceworker E, guaranteed a 58 cent minimum hourly rate by Supplement 4, worked 208 straight time hours in March, 1918; his average piecework earnings for this pay period were 55 cents per hour, including the increase under General Order No. 27. Pieceworker E therefore receives the minimum rate of 58 cents per hour for the March pay period.

(*l*) *Example* 5.—Pieceworker F, guaranteed a 58 cent minimum hourly rate by Supplement 4, worked 208 straight time hours in March, 1918; his average piecework earnings for this pay period equals 60 cents per hour, including the increase under General Order No. 27. Pieceworker F, having exceeded the minimum rate of 58 cents per hour for the March pay period, receives back pay at the 60 cent rate.

(*m*) *Example* 6.—Pieceworker G, guaranteed a 58 cent minimum hourly rate by Supplement 4, worked a total of 268 hours in August, 1918, divided as follows: 50 straight time hours on hourly work at 58 cent rate, 158 straight time hours on piecework, average earnings per hour 65 cents, 20 hours overtime on hourly work at the rate of one and one-half time, or 58 plus 29, equaling 87 cents per hour, and 40 hours overtime on piecework, or 65 plus 32.50, equaling 97.50 cents per hour (as per Art. II, Sec. A.) the total earnings for the August pay period are as follows:

50 hours at 58 cents per hour	$29.00
158 hours at 65 cents per hour	102.70
20 hours at 87 cents per hour	17.40
40 hours at 97.50 cents per hour	39.00
Total	$188.10

GENERAL APPLICATION OF INCREASES, SUPPLEMENT 4 TO GENERAL ORDER 27.

ARTICLE II.

(*a*) The increases provided for in Supplement No. 4 to General Order No. 27 apply only to hourly, daily, weekly, or monthly rates, with the proviso that in no case shall a pieceworker be compensated for service rendered from January 1, 1918, to July 31, 1918, or thereafter, at a less rate per hour, for each straight time hour worked, than the minimum rate established for the hourly worker as per the respective classifications. Effective August 1, 1918, the one and one-half time rate overtime applies to pieceworkers as well as to hourly rated employees.

(*b*) Increase provided for in General Order No. 27 for hourly, daily, weekly and monthly paid employees, were cancelled with the issuance of Supplement No. 4, and in no manner refer to or affect the increases provided for in Supplement No. 4 to General Order No. 27.

(*c*) The hours of service and overtime provisions of Supplement 4, Article IV, Section 2, do not apply to supervisory forces on monthly salary, referred to in Supplement 4, Article III, Section 5.

(*d*) Monthly supervisory forces specified in Supplement 4, Article III, Section 5, assigned to inspect new equipment under construction by contract, shall receive the salary increase of $40 per month.

(*e*) Excepting salaried supervisory forces and coach cleaners, employees coming within the classifications specified in Supplement No. 4 to General Order No. 27, shall be paid for overtime as provided in Section 2, Article IV, of Supplement No. 4.

(*f*) Employees voluntarily leaving the service.—The amount accruing under the provisions of Supplement 4 to General Order No. 27 will not accrue to those employees who left the service voluntarily to accept or secure employment at some other point on the same railroad or on another railroad, or elsewhere, because remaining in the service at the point employed, unless transferred, was the consideration upon which the promise to make the increases effective as of January 1, 1918, was based.

ARTICLE III.

RATES BASED UPON YEARS OF EXPERIENCE.

Supplement No. 4, Article II, Sections 2, 2-A and 2-B.

(*a*) Employees performing work recognized as mechanics' work in the respective trades, who by agreement with duly authorized committees representing the craft or crafts, have had their rates leveled up to that of the mechanic, shall receive the mechanics' rate as per Article II, Sections 1 and 1-A; otherwise Article II, Sections 2, 2-A and 2-B will apply. The period of experience on mechanics' work, in the trade employed, shall be cumulative.

Example 7.—Employee H worked:

12 months on machinist's work for railroad C,
6 months on machinist's work in navy yards D.
12 months on machinist's work in manufacturing plant E.
18 months on machinist's work for railroad by whom now employed.

Total, 4 years.

Such employees should be paid the machinists' rate.

(*b*) Nothing in the above section shall be construed to mean that mechanics of the respective trades who have qualified as such in other industries, shall be paid less than the minimum rates specified in Article II, Sections 1 and 1-A of Supplement No. 4, upon entering railroad service.

ARTICLE IV.

EXPENSE ALLOWANCE.

Sections 4 and 5, Article IV, Sup. No. 4 to General Order No. 27.

The allowance for expenses provided for in Section 4, Supplement No. 4 to General Order No. 27, is the same as shown in Section 5, and is at the rate of $2 per day for three meals and lodging; 50 cents per meal, 50 cents for lodging. It is not intended to make this feature retroactive prior to August 1, 1918.

ARTICLE V.

SUPERVISORY FORCES.

Section 4, Article III, Supplement 4 to General Order 27.

This section applies to minor supervisory forces who are held responsible for the work of their gang, have been so recognized, and who shall receive 5 cents per hour in excess of the minimum hourly rate established for the craft.

ARTICLE VI.

WHEEL SHOP EMPLOYEES.

General Order 27, Supplement 4, Article I, Section 1 and 1-B.

(*a*) Employees boring and turning wheels, and turning axles in wheel shop, are classified as machinists by Section 1, Article I, of Supplement No. 4 to General Order No. 27.

(*b*) Employees pressing on and off wheels are classified as machinists' helpers by Section 1-B, Article I of Supplement No. 4 to General Order No. 27, and receive an increase of 13 cents per hour over rate in effect January 1, 1918, prior to application of General Order No. 27, with a minimum guaranteed rate of 45 cents per hour.

ARTICLE VII.

FLUE WORK.

Supplement No. 4, Article I, Section 2 and 2-B.

(*a*) Flue work, boiler department, includes flue welders under boiler foremen.

(*b*) Heaters and helpers assisting welders shall be classed as boilermaker helpers.

ARTICLE VIII.

RIVET HEATERS.

(*a*) Include rivet heaters in Supplement No. 4, Article I, Section 2-B. Rivet heaters under 18 years of age shall be paid 25 cents per hour until they reach the age of 18, and thereafter helpers' rates.

(*b*) Rivet heaters in Supplement No. 4, Article I, Section 6-B, under 18 years of age shall be paid 25 cents per hour until they reach the age of 18, and thereafter helpers' rates.

ARTICLE IX.

ELECTRICAL WORKERS.

Supplement No. 4, Article I, Section 5 and 5-A.

It is not necessary for an electrical worker to be competent to perform all items of work specified. Employees skilled in any of this work shall be paid the rate established for the respective class.

ARTICLE X.

MATERIAL CARRIERS AND HELPERS.

(*a*) Material carriers in Supplement No. 4, Article I, Section 6-B, applies only to employees regularly engaged in selecting and distributing material to mechanics in car department.

(*b*) Laborers shall not be classified as helpers in the seven basic trades, unless they actually perform work recognized as helpers' work.

ARTICLE XI.

LOCOMOTIVE CRANE OPERATORS.

Section 6, Article I, Supplement No. 4 to General Order No. 27.

Locomotive crane operators, when employed in the car and locomotive shop yards, shall be considered under the same classification as "wrecking derrick engineer" in Section 6, Article I, Supplement No. 4 to General Order No. 27, and receive 13 cents per hour over the rate in effect January 1, 1918, prior to the application of General Order No. 27, with a guaranteed minimum of 58 cents per hour. (Where employed in other departments they shall be considered under the same classification as pile driver, ditching and hoisting engineers, in Article I, Section b of Supplement No. 8 to General Order No. 27.)

ARTICLE XII.

DERRICK ENGINEER.

Section 6, Article I, Supplement No. 4 to General Order No. 27.

"Wrecking Derrick Engineer" covers the engineer operating a power-driven crane employed principally for clearing up wrecks.

ARTICLE XIII.

MOLDERS AND HELPERS—CUPOLA TENDERS.

Supplement No. 4, Article I, Sections 7 and 7-B.

(*a*) A cupola tender is interpreted to be one who supervises the cupola and prescribes the charge, the fuel to be used and drawing the melt.

(*b*) Cupola tender helpers shall receive an increase of 13 cents per hour over rates in effect as of January 1, 1918, prior to the application of General Order No. 27, with a guaranteed minimum rate of 45 cents per hour.

(*c*) Employees in charge of brass melting in foundry shall receive not less than the molder's minimum rate, and helpers the same as helpers in Section (*b*) of this Article.

ARTICLE XIV.

These interpretations shall apply to all addenda, amendments, and interpretations to Supplement No. 4 to General Order No. 27, from their respective effective dates.

Bills for Office Facilities

P. S. & A. Circular No. 31, issued on October 1, provides that, effective at once, no bills shall be made by a railroad under federal control for use of its office buildings, space for offices, proportion of expense of maintaining, repairing, heating, and lighting such offices, or for joint or proportionate use of telephones, telegraph facilities, office furniture, or other appliances on such premises when they are used by the United States Railroad Administration, regional or district directors, or other railroads under federal control which became users subsequent to December 31, 1917. Such arrangements as it is necessary to make for the use of the office facilities of a carrier by the Railroad Administration, re-

gional or district directors, or other railroads under federal control shall be made by or through the regional director in whose jurisdiction the offices are located.

Railroad Men and Politics

One of the first persons to be affected by the director general's order that all railroad men must abstain from political activity was Oscar A. Price, assistant to the director general, who was the owner of a democratic county organ published at Ronceverte, W. Va. After the order was issued Mr. Price concluded that his connection with the paper was inconsistent with the spirit of the order and offered it for sale. When no buyers appeared Mr. Price announced that the paper would cease publication on November 1.

Report of Expenditures for Improvements

Expenditures of the Class I roads in connection with improvement work chargeable to capital account from January 1 to August 31 amounted to $365,371,511, according to the monthly report of the Division of Capital Expenditures. Of this $334,892,024 was charged to capital account and $30,479,487 was charged to operating expenses; and the expenditures during the month of August amounted to $66,000,000. The total authorization for improvements up to October 10 amounted to $1,273,969,461, an increase of $42,939,247 during the month.

The total expenditures during the month of August were greater than those for July, shown in the previous report, which amounted to $55,000,000. For the period from January 1 to June 30 the total expenditures amounted to $244,401,179. The detailed report showing the authorizations to October 10 and the expenditures to August 31 is given in the table.

Revised Instructions for Budgets

R. S. Lovett, director of division of Capital Expenditures, has issued Supplement 1 to D. C. E. Circular No. 10, giving revised instructions as to the preparation of budgets.

Paragraphs *"Second"* and *"Third"* of D. C. E. Circular No. 10, dated August 23, 1918, relating to the preparation of a budget of capital expenditures for 1919, are revised so as to read as follows:

Second: After the federal manager (or general manager), under such instructions as the regional director may have given, shall have prepared his data with respect to projects which he recommends, the same should be carefully gone over by the regional director who should then decide upon the work to be included on or omitted from the budget; after which the final budget for submission to the director of the Division of Capital Expenditures and containing only work which the regional director is prepared to recommend, should be prepared on D. C. E. Form 9 for distribution in accordance with the next succeeding paragraph *"Third"* hereof. The federal manager (or general manager) and regional director should invite and carefully consider suggestions from, and should confer with, officers of the company owning the property to be improved, respecting any work contemplated in advance of or during the preparation of the budget, or at any time, but are to be governed by their own judgment, as to the work to be recommended—definite notice to the company of

AUTHORIZATIONS AND EXPENDITURES IN CONNECTION WITH WORK CHARGEABLE TO CAPITAL ACCOUNT AS OF OCTOBER 10, 1918

CLASS I RAILROADS

	Class of work (1)	1918 budget (2)	Additions to budget (3)	Work specifically authorized to October 10, 1918 Chargeable to— Operating expenses (4)	Work specifically authorized to October 10, 1918 Chargeable to— Capital account (5)	Expenditures from January 1, 1918 to August 31, 1918 Charged to— Operating expenses (6)	Expenditures from January 1, 1918 to August 31, 1918 Charged to— Capital account (7)	Unexpended balance Chargeable to— Operating expenses (8)	Unexpended balance Chargeable to— Capital account (9)
	Additions and betterments (excluding equipment)								
1.	Widening cuts and fills, filling trestles, etc.	$5,097,989	$711,127	$2,950,607	$6,802,989	$838,648	$2,813,712	$2,111,959	$3,989,277
2.	Ballasting	9,379,271	270,061	3,216,499	10,423,308	1,074,519	2,730,354	2,141,980	7,692,954
3.	Rails and other track material	31,365,483	958,974	42,421,512	28,882,542	7,356,018	10,266,663	35,065,494	18,615,879
4.	Bridges, trestles and culverts	38,185,921	1,302,050	22,544,608	36,119,716	6,756,174	14,402,371	15,788,434	21,717,345
5.	Tunnel and subway improvements	2,185,242	48,083	798,527	3,969,481	338,812	707,885	459,715	3,261,596
6.	Track elevations or depressions	4,112,536	.....	1,675,747	13,107,935	284,548	1,819,802	1,391,199	11,288,133
7.	Elimination of grade crossings	7,438,957	255,778	1,158,100	11,849,688	294,520	2,472,402	863,580	9,377,286
8.	Grade crossings and crossing signals	631,082	56,359	155,330	1,362,825	78,160	746,421	77,170	616,404
9.	Additional main tracks	44,574,583	2,278,459	5,441,568	55,247,614	1,190,291	18,823,101	4,251,277	36,424,513
10.	Additional yard tracks, sidings and industry tracks	97,199,114	10,076,083	8,840,390	108,446,252	1,634,482	31,949,032	7,205,908	76,497,220
11.	Changes of grade or alignment	6,359,027	294,448	2,878,096	8,756,553	480,349	2,292,606	2,397,747	6,463,947
12.	Signals and interlocking plants	10,962,462	694,697	2,273,369	12,701,423	552,126	4,196,902	1,721,243	8,504,521
13.	Telegraph and telephone lines	5,129,149	309,659	718,199	5,285,674	390,115	1,766,707	328,084	3,518,967
14.	Roadway machinery and tools	955,857	180,355	82,412	1,523,142	12,625	925,157	69,787	597,985
15.	Section houses and other roadway buildings	1,306,847	172,628	202,157	2,514,499	80,614	1,684,616	121,543	829,883
16.	Fences and snowsheds	817,655	97,131	444,149	2,101,943	78,464	709,637	365,685	1,392,306
17.	Freight and passenger stations, office buildings	20,138,359	2,020,706	3,484,479	28,061,795	864,172	12,495,470	2,620,307	15,566,325
18.	Hotels and restaurants	199,282	195,564	23,639	553,239	2,272	233,315	21,367	319,923
19.	Fuel stations and appurtenances	6,090,558	1,200,697	1,072,443	7,225,370	252,098	2,344,714	820,345	4,880,656
20.	Water stations and appurtenances	13,430,047	798,013	1,754,964	9,373,759	488,582	3,866,785	1,266,382	5,506,974
21.	Shop buildings, engine-houses, and appurtenances	62,694,927	4,090,312	5,997,435	48,345,262	1,393,405	12,128,594	4,604,030	36,216,668
22.	Shop machinery and tools	9,142,488	2,222,178	1,261,234	18,398,689	266,124	4,882,415	995,110	13,516,274
23.	Electric power plants, substations, etc	10,781,347	1,732,585	2,039,297	20,493,428	287,218	4,145,538	1,752,079	16,347,890
24.	Wharves and docks	3,236,167	2,315,165	469,240	4,542,773	268,387	529,738	200,853	4,013,035
25.	Coal and ore wharves	7,024,937	259,829	657,339	5,367,067	277,434	2,823,480	379,905	2,543,587
26.	Grain elevators and storage warehouses	2,914,202	91,973	426,104	2,639,761	79,372	1,759,731	346,732	880,030
27.	Real estate	3,309,141	17,381	17,922	570,487	1,568	537,334	16,354	33,153
28.	Assessments for public improvements	1,179,306	235,167	58,440	1,720,586	33,618	1,011,403	24,822	709,183
34.	All other improvements	27,889,552	51,690	284,183	6,123,802	137,831	2,583,251	146,352	3,540,551
	Total (excluding equipment)	$433,731,488	$32,937,152	$113,347,989	$462,511,601	$25,792,546	$147,649,136	$87,555,443	$314,862,465
	Equipment								
35.	Locomotives, steam	$196,926,868	.....	.....	116,650,411	.....	46,445,516	.....	70,204,895
	Locomotives, steam, ordered by R.R. Administration	.....	.....	.....	76,873,355	.....	*13,879,226	.....	62,994,129
36.	Locomotives, other	.....	.....	.....	2,359,213	.....	1,935,955	.....	423,258
37.	Freight-train cars	212,858,464	.....	.....	94,593,710	.....	62,333,448	.....	32,260,262
	Freight-train cars, ordered by R.R. Administration	.....	.....	.....	289,460,000	.....	*24,152,476	.....	265,307,524
38.	Passenger-train cars	28,459,830	85,197	.....	12,356,043	.....	8,501,921	.....	3,854,122
39.	Work equipment	6,538,810	1,181,488	.....	6,499,296	.....	1,456,439	.....	5,042,857
40.	Motor car and trailers	557,039	20,200	.....	587,853	.....	58,547	.....	529,306
41.	Floating equipment	5,323,337	75,000	.....	4,809,517	.....	549,813	.....	4,259,704
42.	Miscellaneous equipment	507,923	23,240	.....	546,405	.....	203,283	.....	343,122
43.	Improvements to existing equipment	35,807,654	1,299,528	18,639,549	36,037,016	4,694,017	15,275,575	13,945,532	20,761,441
	Total equipment	$486,979,925	$2,684,653	$18,639,549	$640,772,819	$4,694,017	$174,792,199	$13,945,532	$465,980,620
44.	Construction of extensions, branches and other lines	20,330,489	1,219,025	23,836	38,673,667	Cr. 7,076	12,450,689	30,912	26,222,978
	Total all work	$941,041,902	$36,840,830	$132,011,374	$1,141,958,087	$30,479,487	$334,892,024	$101,531,887	$807,066,063

*Expenditures to date.

the work actually to be undertaken being provided for in connection with D. C. E. Forms 3, 4 and 6. The suggestions and conference herein contemplated are not to comply with any legal requirement but to get the benefit of the judgment of the company officers and to provide additional opportunity for meeting the wishes of the company wherever reasonably practicable.

Third: When the recommendations shall have been decided upon they should be made on D. C. E. Form 9 in accordance with instructions given in paragraph "Fourth" of D. C. E. Circular No. 10. The original typewritten copy and one carbon copy should be sent by the regional director to the director of the Division of Capital Expenditures at Washington; and in transmitting the same the regional director should make such general observations and add such information and suggestions with respect to particular projects as he may deem useful for the information and advice of the director of the Division of Capital Expenditures.

One copy should be sent to the president of the company owning or previously operating the line with respect to which the budget is submitted. Such copy is only for the information of the company.

The regional director and federal manager (or general manager) will retain such copies for their own files and use as may be necessary.

All copies should be mailed not later than December 31, 1918.

Regional directors, federal managers and all others concerned in the preparation of the budget are urged to appreciate and act upon the necessity of conserving capital, labor and material for war purposes and to realize that such of these as may be available for railroad improvements will be no more than sufficient to provide the transportation facilities absolutely essential to the country's business under war conditions.

In planning improvements chargeable to capital account addition the output of the railroad shops for the first six months of the year was 4414. The number of freight cars on order and undelivered on August 31 was 106,172 for domestic service, and 55,835 for foreign service, the total for domestic service including the 100,000 cars ordered by the Railroad Administration, of which some 500 have since been delivered. The output of the carbuilders for the first six months was 48,656, of which 18,899 were for domestic service, 3,311 private cars, and 8,723 for the army and navy, not including tank cars, 661 were tank cars for railroads, 7,290 tank cars for private owners and 1,345 tank cars for the army and navy. In addition there were 8,290 cars for the Allied governments and 137 for neutral governments A similar classification of the output for July and August is not available, but it includes 4,260 for domestic service and 9,223 for foreign service. The total number of freight cars on order on January 1 was 42,696 and only miscellaneous orders have been placed since for domestic service except the government order for 100,000 cars. Deliveries of the latter cars have been delayed in part by changes in the allocation of the cars to the various roads and the necessity of restencilling them because of changes.

The Railroad Administration has given out the following table showing locomotive deliveries during September, which brings the total for this year up to 1951:

LOCOMOTIVES SHIPPED DURING SEPTEMBER

Works	For week September 1 to 7			For week September 8 to 14			For week September 15 to 21			For week September 22 to 28			For week September 29-30		
	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type
American	C.M.&St.P.	12	USRA Mik.	C.M.&St.P.	12	USRA Mik.	M.K.&T.	18	Mikado	U.P.	14	USRA Mik.	S.A.L.	4	USRA Mik.
	C.&E.I.	6	USRA Mik.	Me.C.	2	4-6-0	C.M.&St.P.	13	USRA Mik.	C.M.&St.P.	12	USRA Mik.	C.M.&St.P.	1	USRA Mik.
	Sou.	1	Santa Fe	M.K.&T.	7	Mikado	H.V.	5	Mallet	T.&O.C.	4	USRA Swi'h			
	Me.C.	1	Switcher	Pa.L.W.	1	Santa Fe	C.&E.I.	5	USRA Mik.	C.&O.	5	Mallet			
	Ill.C.	3	Switcher	H.V.	5	Mallet	Ill.C.	3	Switch	S.A.L.	6	USRA Mik.			
	Vgn.	1	Mallet				U.P.	6	USRA Mik.	Me.C.	1	Switcher			
	Pa.L.W.	1	Santa Fe				Me.C.	2	Switch						
		25			27			52			42			5	
Baldwin	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type
	P.&R.	1	Mallet	B.&O.	5	USRA Mik.	Gt.N.	1	Mikado	L.E.&W.	6	USRA Mik.	Sou.	1	Mallet
	B.&O.	10	USRA Mik.	Gt.N.	2	Mikado	Gt.N.	1	Switch	C.B.&Q.	2	Mikado	P.&R.	1	Cons.
	Sou.	1	Mallet	Gt.N.	2	Switcher	L.&H.R.	4	USRA Mik.	P.&R.	1	Mallet			
	A.C.L.	2	Mikado	A.T.&S.F.	1	Mikado	A.C.L.	2	Mikado	P.&R.	1	Cons.			
	Gt.N.	2	Mikado	P&R.	1	Cons.	St.L.-S.F.	1	Santa Fe	Pa.RR.	1	Mikado			
	Sou.P.	2	Switcher	P&R.	1	Mallet	B.& O.	1	Mallet	Gt.N.	1	Switcher			
	C.B.&Q.	1	Mikado	Sou.	1	Mallet	P.&W.Va.	3	USRA Mik.	Gt.N.	1	Mikado			
	U.P.	2	Mikado	U.P.	1	Mikado	L.E.&W.	7	USRA Mik.	Ill.C.	1	Mikado		2	
	A.T.&S.F.	1	Mikado	Pa.RR.	1	Mikado	S.P.	1	Switcher	U.P.	1	Mikado			
	Ill.C.	1	Mikado				P.&R.	1	Cons.						
	Pa. RR.	1	Mikado												
		24			15			22			15				
Lima	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type	Road	No.	Type
	N.Y.C.	5	Mohawk	N.Y.C.	5	Mohawk	N.Y.C.	3	Mohawk	Ill.C.	7	Mikado	Ill.C.	1	Mikado
							Ill.C.	1	Mikado						
								4							
Total		54			47			78			64			8	

Grand total 251

In addition to the above, the American Locomotive Company shipped 15 miscellaneous domestic and completed 15 foreign, and the Baldwin Locomotive Works shipped one miscellaneous domestic and completed 198 foreign locomotives.

the first consideration should be reasonable safety in operations, and secondly, increased capacity where that is needed. Any improvement that is not required for either of these purposes should be deferred until after the war unless exceptional circumstances make it necessary at this time. Improvements designed to effect permanent economies should be left for the companies to make when prices and costs will be more normal, unless the economy is so great that substantially the entire cost will be saved during federal control.

Freight Car and Locomotive Output in 1918

The total addition to the freight car equipment of the country up to September 1 this year has been approximately 40,000, according to reports recently compiled. This includes private cars and tank cars. The total output of the car builders up to August 31 was 63,139, including 27,718 for the army and navy and foreign governments, and in

Claims Placed Under Jurisdiction of Legal Department

A circular issued by John Barton Payne, general counsel, announces that as there has heretofore been no uniformity as to the jurisdiction of loss and damage, freight and personal injury claims, it has been considered wise to place the responsibility of handling such claims directly upon the legal department. The general solicitor of each road will be held responsible for the results and is requested to take such steps as will bring the claim organization to the highest efficiency. In view of the economic conditions of the country generally, and particularly the operation of the railroads, attention is drawn in the circular to the enormous amount of money expended annually for loss and damage, freight and personal injury claims. The Claims and Property Protection Section reporting to the Division of Law was established to co-ordinate under one head the entire subject and to exercise supervisory jurisdiction, aiding to the

fullest extent those coming in direct contact with the subject. From time to time, orders through the office of the director general will be issued with reference to the uniform and economical settlement of both loss and damage, freight and personal injury claims. Full and hearty co-operation with this work is expected from all officers and employees. Claim agents are expected to co-operate to the fullest extent in connection with the prevention of claims as well as the settlement thereof.

Elimination of Loss and Damage

In connection with its campaign for the elimination of loss and damage to shipments of less than carload freight, the Railroad Administration has had printed posters signed by Director General McAdoo of suggestions for co-operation with carriers in eliminating loss and damage to freight in transportation, which are to be posted in freight stations and shipping rooms of manufacturers. The poster says:

A total of 27,541 small shipments offered were refused by railroads during four months on one middle western district recently because of faulty packing. Of these shipments 14,570 were repaired or recoopered and finally accepted, but 12,971 were rejected entirely.

Be careful in the stowing and bracing of your carload shipments to avoid disarrangement or shifting of packages, which often causes loss and damage in the usual course of transportation. Do not use weak and fragile packages for commodities of excessive weight that will not stand the ordinary transportation.

Second-hand containers are undesirable, but when used should be carefully reinforced and all old marks obliterated.

Tariffs require that full name and address of consignee shall be marked on each and every piece of less-than-carload freight. To comply carefully with this rule, it is greatly to the interest of the owner of the freight to avoid mistakes in identity, bearing in mind that many losses are due to marks becoming detached or blurred so they can not be read. Your own name and address should appear on each package so that carriers may confer with you promptly if a package goes astray or is refused and unclaimed at destination.

Your co-operation in carrying out these suggestions not only helps to conserve the necessities for winning the war, but goes far in *eliminating the complaints of your patrons as well as the labor and annoyance of claims.*

Class Rates to Be Worked Out on Mileage Basis

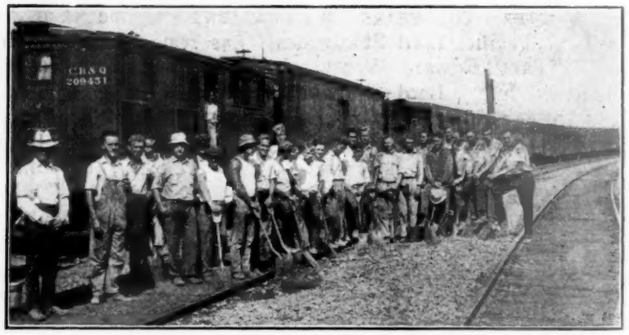
Plans for bringing about a considerable degree of standardization and uniformity in freight rates on the basis of cost of service and mileage are being worked out in a preliminary way under the direction of the Division of Traffic, for gradual application to all parts of the country as far as class rates are concerned. The general scheme contemplates a number of graduated scales of rates on a mileage basis, ranging up to distances of 500 or 600 miles and related to each other on a percentage basis in accordance with the general variation in the cost of performing service in various parts of the country. A general scale of rates based on the cost of service for various distances will be taken to represent 100 per cent and the scales to be applied in other regions will be, for example, 80 per cent or 120 per cent, or other percentage of the standard scale, the rates being higher in the West than in the East. Commodity rates will not be affected. It is proposed to apply the scales thus worked out to both state and interstate traffic and for this reason it is proposed to work to some extent in co-operation with the state railroad commissions, many of which have already established distance scales for application in their own states. It is not the intention to confine the application of a scale to the boundaries of a single state but a given rate group may include several states. Many of the details will be worked out after conferences between the district and regional freight traffic committees and the state commissions.

One of the first applications of the plan has been the establishment of a new scale of class rates between points in Oklahoma on both intrastate and interstate traffic which represents approximately an average of the rates in a number of southwestern states. The scale adopted is regarded as more or less temporary but further consideration is being given to a more comprehensive revision and equalization of conflicting schedules in the Southwest.

College Boys as Track Laborers

THE DRAIN OF THE WAR upon the the nation's man power has resulted in the extensive utilization of high school and college boys for manual labor and particularly for farm work. Last spring when the Chicago, Burlington & Quincy was in the market for track labor it occurred to Thomas E. Pratt, chief special agent, who is in charge of that work, that school boys might be used as advantageously by the railroads as by the farmers. Accordingly he visited the University of Chicago and presented to the young men there the advantages of spending their vacations in useful employment for the benefit of the country and, incidentally, to their own financial and physical advantage.

As a result of Mr. Pratt's efforts about 75 University of Chicago students spent the summer working as track laborers



Students Learn How to Use a Shovel

on the Burlington. The men were given free transportation in tourist sleeping cars from Chicago to the scene of work and return, as well as free meals enroute. Under the terms of the agreement effected with them their compensation was fixed at $2.50 per day plus any increase that might later be authorized by the Railroad Administration. While at work they were given free lodging in repainted and refinished bunk cars. Each car contained eight bunks, one bunk to a man, supplied with mattresses and blankets and two cars were fitted with shower baths. A kitchen car in charge of an experienced chef provided board to the men at the rate of $5.25 per week.

The majority of the students arrived at Alliance, Neb., on June 20, and commenced work under a track foreman of the road at Antioch, Neb., the following morning. Most of the men continued at the work for a period of 60 days and a few even longer. The route of the work train was from Alliance, Neb., northwest through Wyoming to Billings, Mont., and from Billings southwest through the Big Horn valley to Casper, Wyo.

The employment of these young men in this manner not only disclosed their adaptability to track work but the discipline and association with practical railroad men proved as beneficial to the boys as the strenuous physical training they underwent. In the course of their work they passed through a country where they had an opportunity to study life in the mountains, oil fields, mines and western ranches.

Lord Shaughnessy

Edward W. Beatty

Sir George Bury

Grant Hall

Important Changes on the Canadian Pacific

Lord Shaughnessy Retires From Presidency in Favor of E. W. Beatty, But Remains Chairman

AFTER 20 YEARS MANAGEMENT of the Canadian Pacific, Lord Shaughnessy has resigned as president and Edward Wentworth Beatty has been elected to succeed him. Lord Shaughnessy remains as the chairman of the board. The change is not merely one of form. Mr. Beatty becomes actual head of the great Canadian Pacific system with its 13,388 miles of railroad and its 112 million dollars of assets, and Mr. Beatty is but 41 years old. With the election of Mr. Beatty and the retirement of Lord Shaughnessy, Sir George Bury has resigned as vice-president in charge of operation although it is understood that he has not entirely severed his connection with the company. Grant Hall, who has been general manager of the western lines, has been elected vice-president in charge of operation of the Canadian Pacific system.

There is to be no such division of executive duties between the chairman of the board of directors and the president of the company on the Canadian Pacific, as is sometimes the case with American railroads. Lord Shaughnessy will remain as adviser to the company and as one of the great financial figures, one of the great national assets of Canada, but Edward W. Beatty is now the executive head of the Canadian Pacific.

Mr. Beatty has been vice-president and general counsel of the Canadian Pacific; all of his life's work has been with that company. He was called to the bar in 1901 and a month later was made an assistant in the law department of the Canadian Pacific.

The first thought that naturally comes to a railroad man following this announcement is the fact that Mr. Beatty is not an operating man and is an extraordinarily young man to assume such vast responsibilities. The loss of Sir George Bury throws into even greater prominence this lack of operating experience on the part of the new president. As a matter of fact, however, Mr. Beatty has a grasp of operating details that is understandable only when the work he has been doing in the past few years is generally known. To the executives of many of the larger railroad systems of the United States. Mr. Beatty and his work are quite well known but to the great majority of American railroad men and Americans intimately interested in railroads, both the man and his work are quite unfamiliar. To the officers and even to the rank and file of the Canadian Pacific employees Mr. Beatty is thoroughly well known. While the actual direction of operation has been left entirely in the hands of Sir George Bury during the time that he was vice-president in charge of operation, Mr. Beatty has been hardly less closely in touch with the property and the personnel of the organization than has Sir George.

Except Lord Shaughnessy himself, no one connected with the property has been so closely in touch with the public relations of the company as has Mr. Beatty. It would go without saying that he has the confidence and respect of the board of directors and more influential stockholders and it would be the ordinary and conventional thing to say that he also has the respect and confidence of the organization and of the Canadian government, but a conventional recitation of these words would not by any means do justice to the situation. The respect with which the organization regards the new president is not a conventional thing. It is an undeniable fact founded on the experience of invariably receiving a square deal from Mr. Beatty. Frankness, utter lack of ostentation, modesty combined with first-class fighting ability are the characteristics which impress both the railroad officers who come in contact with the new president only occasionally, and likewise with the men who are intimately associated with him day by day.

Unlike most American railroads—with the exception only of the Union Pacific—the Canadian Pacific is a vast business enterprise of which the operation of its miles of railroad is only a part. It is true that Lord Shaughnessy had had experience as an operating man before he became president, but it is equally true that Americans, both in the states and in Canada, and even more so Englishmen, think of him as the executive head of one of the greatest business enterprises in any country, rather than as a railroad man pure and simple. An operating man no matter how high he may stand in his own profession would not measure up to the requirements of the presidency of the Canadian Pacific under present circumstances. What is needed is rather a combination of business man, diplomat and statesman. At first meeting Mr. Beatty would not impress one as a diplomat, at least of the old school of diplomacy; he is far too frank, but his frankness is not of the kind that hurts. He is not a driver of men but rather a leader.

It is quite impossible to comment in any adequate way on

the work of Lord Shaughnessy. The Canadian Pacific is of course the great monument which has been built up by his work, but the development of Canada as a whole has been almost equally indebted to this man who was born in Milwaukee, but whose life work has been in Canada. The honors that have come to him have been many and varied, but of them all he is probably prouder of the spirit of loyalty which he has brought into being among the Canadian Pacific's employees and officers, than of any other achievement.

It is probably true that in his choice of a successor—for we may feel quite confident that the choice of the Canadian Pacific board of directors was very greatly influenced by Lord Shaughnessy's own personal opinion—one of the main factors was the belief that Mr. Beatty was a man who could sustain this spirit of loyalty insofar as it affected the company and attach it to himself as head of the business.

The Canadian railroad situation is less complicated than our own and in some ways is probably as closely tied up in the manner of its working out, with our own, as if it were actually within the United States, yet the management of the property in the next few years may mean the difference between private and public ownership in Canada. If the United States government should permanently take over the railroads now under the United States Administration, it might lead to government ownership and operation of the Canadian railroads, regardless of the inherent merits of the Canadian situation. On the other hand the Canadian Pacific is in a stronger position on the financial side, to resist and escape government ownership, than are the United States railroads. Furthermore, the Canadian Pacific's service to the public has been such that there is apparently no strong public sentiment for punishing private owners for either fancied or real misdeeds of the past.

Within the past year the Canadian government has taken over the Canadian Northern so that with the Intercolonial it now operates a railroad system of 11,224 miles; the Canadian Pacific competes to some extent with this government system. It competes also with the Grand Trunk, which is now under private ownership and management, but which is in a far weaker condition financially to resist government ownership than is the Canadian Pacific. Were the Grand Trunk to be taken over by the government we would have the interesting situation of an immensely strong transcontinental privately owned and privately operated railroad competing with two less favorably situated and less economically managed government-owned transcontinental systems. To compete successfully, the Canadian Pacific would not only have to be exceedingly well operated, but would have to be managed throughout its affairs, and especially in its relations to the public and with the government, in such a way as to command the admiration and respect of both. It would have to be utterly above suspicion, almost above reproach or criticism. It is a huge task which has fallen upon the shoulders of a man of forty-one.

A word should be said, in discussing the Canadian Pacific situation, about Sir George Bury who has resigned. He is one of the best operating men that American railroading has produced. He brought the Canadian Pacific through the almost unbearably trying times of 1914-15 and has operated the property all during the war with a skill that has rarely if ever been equalled. He is a young man, although not as young as Mr. Beatty, and a man of quite extraordinarly strong opinions and personality. It is not surprising that after the strain he has been through and the responsibilities which he has taken, he should feel that he did not care to continue in charge of operating the property under a new president. It is unquestionably a loss to the Canadian Pacific, but he leaves as his successor a man—Grant Hall—whom he himself picked out and advanced to the position of general manager of the western lines.

Grant Hall is a man of great physical strength and endurance, universally liked by his subordinates and a practical operating man of wide experience. He was born at Montreal, November 27, 1863, and was educated at Bishops College and School, Lennoxville, Quc. He entered the service of the Grand Trunk as a machinist apprentice in 1883. From 1887 to 1893 he was locomotive foreman on the Canadian Pacific; and from 1893 to 1898 general locomotive foreman on the Intercolonial at Moncton, N. B. He returned to the Canadian Pacific in 1898 and was consecutively general foreman, master mechanic, assistant superintendent motive power eastern lines, superintendent motive power and car department western lines and assistant general manager of the western lines. He has been general manager of the western lines since January 1, 1918.

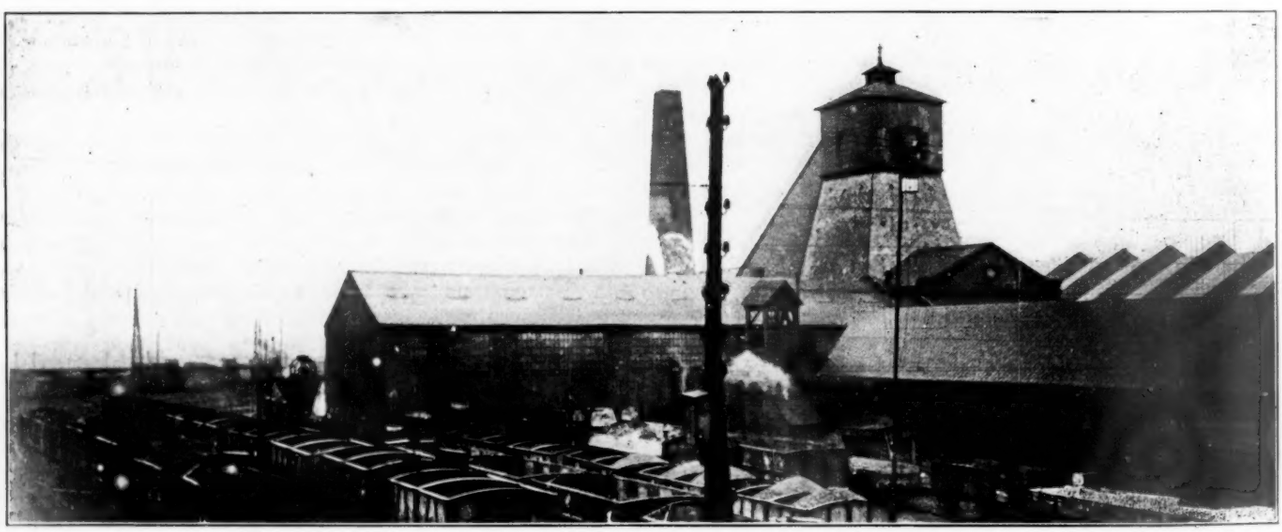


Photo from Press Illustrating Service

A View of the Great Coal Center—Lens

"Unconditional Surrender"

Orders Issued by the Regional Directors

A Great Variety of Instructions Have Been Sent Out During the Past Week

DAYLIGHT SAVINGS LAW.—The Eastern regional director, in Order No. 3000-420, dated October 11, transmits General Order No. 45 (noted in the *Railway Age*, October 11, page 860) and suggests that arrangements be made (and properly advertised) to start over-night passenger trains one hour late on schedule the night before, so as to avoid holding them an hour on the road.

Shipments of Grain to Gulf Ports.—In instructions issued October 10, the Central Western regional director states that U. S. war department transportation orders are required on all shipments of grain in bulk, or sacked, for account of the war department, when destined to gulf ports, whether for export or domestic use.

Budget for 1919.—In Circular 105, October 7, the Southwestern regional director sets forth detailed instructions to govern the preparation of budgets for the calendar year 1919. The budgets are to be prepared in time to reach the office of the regional director by December 1, 1918.

Record of Shipments of Distilled Spirits.—In Order 88, dated October 5, the Southwestern regional director requests railroads in his jurisdiction to keep a record at freight stations of the freight bills covering shipments of distilled spirits, with the names of the consignors and consignees, to assist the internal revenue officers in discovering violations of the law.

No Furloughs for Railroad Men in Army.—In Supplement 7 to Circular 30, dated October 11, and Supplement 9 to Circular 112, dated October 10, the Northwestern and Central Western regional directors, respectively, announce that the war department has ruled that no furloughs will be granted to men in military service for railway work. Previous instructions on this matter, abstracted on page 632 of the *Railway Age* of October 4, are hereby cancelled.

Coal for Heating Stoves.—In Supplement 8 to R. P. C. Circular 5, and Circular 106, dated October 9, issued by the Central Western regional purchasing committee and the Southwestern regional director respectively, recommend that lump coal be used to heat stations and signal buildings. The manager of the Fuel Conservation Section of the U. S. Fuel Administration states that certain roads furnish unscreened coal for the stoves in these buildings with the result that fine coal is left in the bin or thrown away by the men in charge of the fire.

Fire Protection During the Winter.—The regional director of the Pocahontas region, in Circular No. 11, issued October 9, quotes Bulletin No. 3 of the Insurance and Fire Protection Section relating to precautions to be taken with reference to fire hazards as winter approaches. (Similar circular by Southwestern regional director noted on page 670 last week.)

Leasing Right-of-way for Mining Purposes.—In Circular 108, dated October 10, the Southwestern regional director states that a federal manager has no right to permit drilling for oil or mining on the right-of-way unless the railroad has fee simple title to the property and the corporation has approved of the arrangement. The Division of Law of the Railroad Administration regards mineral development on roads as a corporate matter except when it is essential to the operation of the line. For instance, in the case of oil or coal for fuel purposes.

Wage Schedules.—In Circular 182, dated October 12, the Central Western regional director announces that while for operating convenience individual railroads have in some cases been divided between two regions and have been placed under the jurisdiction of two or more federal managers, this arrangement does not require the making of separate agreements with the train and enginemen upon these temporarily separated units.

Contractors' Bonds.—In Order 91, dated October 10, the Southwestern regional director quotes a letter from Walker D. Hines, assistant director-general, which states that General Order 24 was not intended to modify previous practice with respect to requiring contractors to give bonds at their expense for the performance of work. Such bonds should be required as heretofore. The Eastern regional director has issued a similar order, 401-5AIII.

Terminal Delivery of Pacific Export Traffic.—In Circular 180, dated October 12, the Central Western regional director states that certain shipments for export via the Pacific Coast ports have been diverted from the terminal lines specified, thereby causing confusion in clearing the freight at the port of exit. He asks that instructions be issued at once that such shipments must not be diverted from the terminal lines specified in the bill of lading and waybill except upon authority of that line.

Discontinuing Car Interchange Reports.—In Order 90, dated October 9, the Southwestern regional director asks that before any changes are made relative to discontinuing freight or passenger car interchange reports or records, consolidating or discontinuing car records, consolidating territory or changing the location of headquarters of car service officers or other similar changes affecting matters in which the Car Service Section is interested, the proposed arrangements be submitted to the office of the regional director so that they may be forwarded to the Car Service Section for its suggestions and approval.

Centralizing Questions of Service and Complaints Under One Head.—In Order 89, dated October 8, the Southwestern regional director announces that questions of service and complaints in connection therewith, particularly as regards the movement of live stock, perishables and other freight requiring special attention, will be handled through the Car Service Section in order to centralize the work under one responsible head. The Car Service Section will be kept informed regarding any instructions which may be issued to the roads in the Southwestern region affecting changes in service, packing instructions, etc.

Public Service Commission Laws.—The Eastern regional director, in Order 3000-419, dated October 7, advises that the Railroad Administration has received a complaint from the Public Service Commission of a state in the Eastern region that stops of a passenger train at a certain regular station have been discontinued by a railroad under federal control without first obtaining the consent of the commission, although the law of the state requires that such consent must be secured before regular stops of passenger trains may be discontinued. It should be understood by all concerned that carriers under federal control are subject to all laws and liabilities as common carriers, whether arising under state or federal laws, or at common law, except in so far as may be inconsistent with the provisions of the federal control act or with any orders issued by the director-general, to whom the powers conferred upon the President by the act have been delegated. If there should be any instances where it is thought that strict compliance with a federal or state law or an order issued by any duly authorized individual, commission or public body pursuant thereto will result in undue

loss of efficiency or will place unreasonable burdens upon the railroads under federal control, an effort should be made to obtain a satisfactory settlement of the propositions involved by dealing directly with the federal or state authorities; failing which the matter should be submitted to this office for a ruling before any arbitrary action is taken.

Movement of Oil.—In Supplement 3 to Circular 72, dated October 9, the Northwestern regional director states that while the handling of the oil traffic in train lots has been satisfactory, it is essential that an improvement be made in the movement of miscellaneous shipments to various destinations, and the return of empties, which cannot be included in train-lots. Delays to this class of shipments are due to holding cars in yards an unwarranted length of time before placing them for unloading, failure to move tank cars promptly after unloading and the use of tank cars as peddler cars in the distribution of oil to local stations. Corrective measures must be taken to avoid unnecessary delays and oil for railroad use must be given preferred attention.

Public Improvements.—In Circular 41, dated October 8, and Supplement 1 to Order 26, dated October 10, the Northwestern and Southwestern regional directors respectively, outline rules to be followed in handling public improvements contemplated by state, county, district or municipal authorities. When the cost chargeable to the railroad does not exceed $500 the matter can be disposed of by the federal manager. When the cost is over $500, but less than $5,000, the federal manager will submit a report to the regional director with his recommendations and will sign no agreement regarding any improvement without the latter's approval. If the cost is $5,000, or more, the federal manager will submit a report to the regional director which, when approved by the latter, will be forwarded to the director of the Division of Capital Expenditures for final approval.

Lumber Situation.—In Supplement 5 to R. P. C. Circular 26, dated October 11, the Central Western regional purchasing committee requests railroads in its jurisdiction to furnish information concerning the lumber which they have on hand and on order on a form prepared by the Forest Products section of the Central Advisory Purchasing Committee. The form inquires what percentage of the railroad's estimated requirements for the balance of 1918 is now on hand for maintenance of way and structures, including buildings and maintenance of equipment; what percentage of its estimated requirements for the year 1919 is now on hand for the same purposes, and what percentage of its estimated requirements for the balance of 1918, and for 1919, is ordered for those purposes.

Physical Examinations for Mechanics.—The Eastern regional director in Order 3000-421, dated October 11, quotes as follows from a communication received from the director, Division of Operation, under date of October 7, in regard to physical examinations required in the employment of the locomotive and car repair organizations:

> We continue to receive complaints of unnecessarily rigid physical examinations required in the employment of the locomotive and car repair organizations. Your attention is again invited to the following paragraph in the letter addressed to Mr. Wharton by the director general under date of February 14:
>
> "Mechanics applying for employment will not be denied such employment for any cause other than inability to perform the work. This preference rule will be in effect as long as three-year apprentices or promoted helpers are employed at mechanics' rates."
>
> While I do not intend you to understand that physical examinations should be eliminated, it is clear that the requirements should be decidedly more liberal than in the past, and the fact that an employee cannot pass a satisfactory examination to enable him to participate in relief and benefit associations should not bar him from employment, provided he waives membership in such associations. I understand that men now are in some cases accepted for employment upon such waiver, but only for a period of six months.

Control of Export Freight via North Pacific Ports.—In a circular issued October 11, the Northwestern regional director announces the appointment of F. W. Robinson, chairman; F. D. Burroughs and W. D. Skinner, as members of the North Pacific Export Committee, with headquarters at Portland, Ore., to control the movement of exports made through all Puget Sound ports and through the ports of Portland, Ore., and Astoria. On the same date Mr. Robinson appointed a sub-committee consisting of F. A. Peil, chairman; F. J. Calkins and A. Tinling, with headquarters at Seattle, Wash., which will have immediate charge of the movement of export freight through Seattle, Tacoma and other Puget Sound ports.

In Circular 1, dated October 11, the North Pacific Export Committee outlines the rules which will govern the movement of export freight.

> (1) Until further notice no shipment for exports to foreign countries through the North Pacific ports will be received for transportation until the agent at the point of shipment has been furnished with (a) a railroad shipping permit issued by the committee, (b) a federal export license issued by the War Trade Board when shipments include anything the export of which is subject to government permission.
>
> (2) Railroad shipping permits will be issued only on satisfactory showing of definite space engagement with a steamship company which has met all requirements of the railroads in connection with the issue of through bills of lading.
>
> (3) The railroad shipping receipt and way bill must show (a) the number of the government (War Trade Board) license when such license is required, (b) the railroad shipping permit number, (c) the name of the railroad which is to make the delivery to the ship.
>
> (4) Shipments exceeding the quantity or weight provided in the railroad shipping permit must not be received, and when part lots are forwarded, full description must be endorsed on the permit and the date and place of forwarding.
>
> (5) If a shipment is to be made from more than one point a separate permit will be required to cover the movement from each point. Likewise if a shipment from a given point is divided between two or more initial railroads a separate permit will be required for the shipment via each road.
>
> (6) Railroad shipping permits are issued with a time limit. Shipments must not be accepted by the initial carrier after their expiration.
>
> (7) Shipments heretofore authorized by permits issued by F. R. Hanlin, joint export agent, or J. H. O'Neill, terminal manager, Seattle, Wash., may be accepted prior to the date of the expiration shown in such permits.

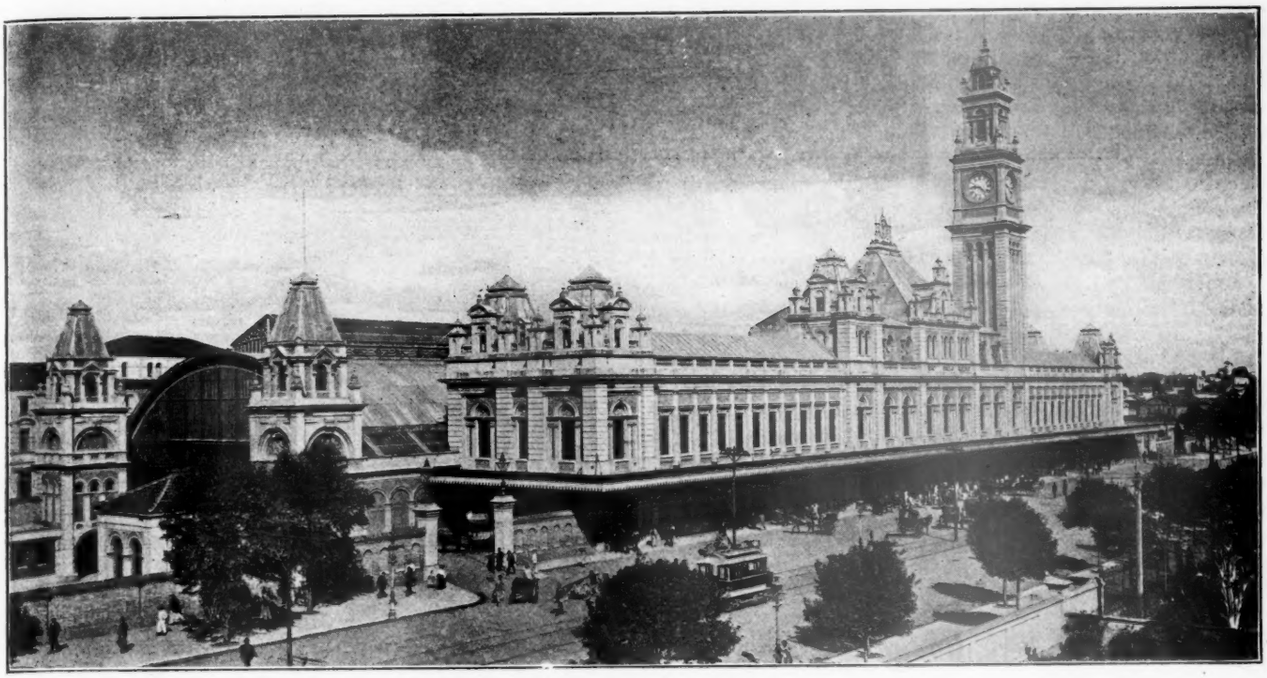
The U. S. Railroad Administration is expected to place orders shortly for additional locomotives for 1919 delivery. It is reported that the American Locomotive Company will build 500.

The War Department, through the department of military railways, is placing orders for approximately 40,000 freight cars for service on military railways in France, some of which may be loaned to French government railways by General Pershing.

Revision of rules for the settlement of claims for loss and damage of grain in transit were the subject of a conference at Detroit, Mich., last week, continuing through several days and participated in by railroad agents and prominent shippers. The conference was called at the request of the Interstate Commerce Commission.

Indictments have been returned by the federal grand jury at Chicago at the instance of the Railroad Administration, against an employee of the Chicago & North Western, who, having in his possession annual passes over about 25 different railroads, had rented their use to a number of business men for extended trips throughout the West. Indictments were also returned against five men who had used the free transportation.

Severe forest fires raging in Northwestern Minnesota since Saturday, October 12, have burned to death hundreds of people, and only partial reports have yet come to hand. In the region west of Duluth about 100 miles and southwest about 75 miles, many villages have been destroyed, and at Duluth and Superior, the railroads suffered great losses. It is reported that in the Northern Pacific yards at Duluth, two hundred passenger cars were destroyed. State militia and railroad employees rescued thousands of villagers and farmers.



The São Paulo Station at São Paulo

The Development of the Brazilian Railways

Brazil Presents an Important Potential Market for American Railway Supply Manufacturers

THAT BELGIUM was the largest exporter of railway supplies to Brazil is one of the interesting features in a report on the railways of Brazil recently prepared by the Latin American division of the Bureau of Foreign and Domestic Commerce. Brazil imported from Belgium in 1912 over $8,000,000 worth of railway supplies, 30 per cent more than from the United States, which was second. Brazil secures almost all of its railway equipment from other countries. Since the beginning of the war it has imported but a very small proportion of the amount of railway material previously imported. Whereas in 1912 it imported from five leading countries $22,500,000 worth of this material, in 1915 it imported only $1,200,000 and in 1916 $2,000,000, nearly all of these imports in the latter year being from the United States. The report thus emphasizes the importance of the market for railway supplies that will present itself in Brazil for the American railway supply manufacturers after the war.

An abstract of the report follows:

The war has vitally affected many aspects of the economic development of South America, but few of these aspects have been more directly concerned with the struggle than have the Brazilian railroads. The financial depression of 1914 and the swift decline of Brazilian exchange have materially decreased the net earnings of the various companies, especially of those with large foreign obligations to meet. The cutting off of the usual supply of imported fuel has forced the companies to resort to native wood and coal, the latter being inferior in quality and hard to obtain. At present, too, the railroads are hampered by lack of capital and the impossibility of importing equipment. Fortunately, however, there are also redeeming features to the present situation. The extraordinary diversification of industries now going on in the republic and the departure from concentration upon coffee and rubber is certain to result ultimately in the rapid expansion of the railroad systems into regions hitherto untapped which are rich in raw materials.

Furthermore, the management of Brazilian railways should be a matter of timely concern to American railway interests because of the long experience of the Brazilian Republic with such problems as federal control and operation, the guaranty of interest on railway investments, etc.

Mileage in Operation, Under Construction, and Plans Approved

With an area of over 8,000,000 square kilometers or more than 45 per cent of the total area of South America, Brazil now has less than 27,000 kilometers of railroad mileage in operation. With an area and population nearly three times as great as that of Argentina, Brazil has only about three-fourths of the latter's railroad mileage. The following table taken from the Retrospecto Commercial do Journal do Commercio, Rio de Janeiro, presents the actual and projected railroad construction as of January 1, 1916:

	In operation Kilometers	Under construction Kilometers	Plans approved by government Kilometers	Total Kilometers
Owned by government:				
Operated by government	4,836	1,799	1,101	7,736
Leased to private companies	9,174	1,503	3,820	14,497
Operated under government concessions:				
With guaranties	3,623	390	1,879	5,892
Without guaranties	2,227	14	416	2,657
With state concessions	6,786	428	293	7,507
Total	26,646	4,134	7,509	38,289

Factors in Development of Country

The present population of Brazil is a mere fringe extending from one end of the long seacoast to the other, but a

fringe which is slowly widening as the development of the country penetrates beyond the mountain barrier farther and farther toward the interior of the more productive coastal states. The important part which railroad construction has already played in the promotion of the settlement and industrial development of the country is strikingly revealed by an examination of the map of the republic. Especially is this true around Rio de Janeiro and São Paulo, where five of the seven lines through the coastwise barrier of the Serra do Mar are located. Within a very limited area surrounding these two important cities, a section which comprises perhaps a twentieth of the total area of the country, live nearly a fourth of the Brazilian people. A very large percentage of the total railway mileage of the country is confined within this same small district, while the undeveloped interior of the country, with its great mineral wealth, its pastoral possibilities, and its vast forests of rubber, medicinal plants, dyewoods, and hardwoods is accessible from the coast only by means of a few spurs of rail lines and by navigable rivers. The important northern coastal states of Bahia, Pernambuco, Ceara, and Para, though served by minor local railways, have no rail connections with each other or with the south and are dependent upon coastwise shipping for interstate trade. In fact, the ports of the two latter states are in normal times almost as accessible from New York as they are from Rio—a fact which vitally affects the trade organization of the country.

Classification by Location

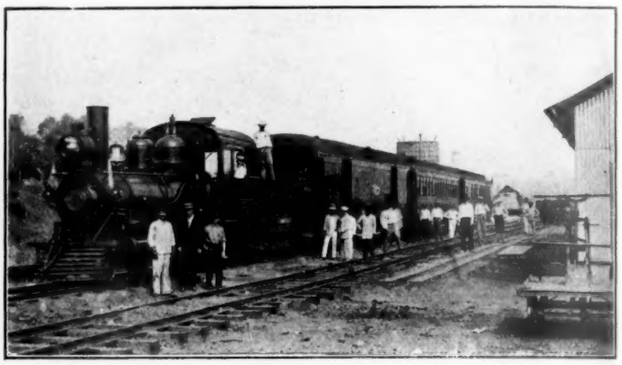
Classified according to location the railroads of Brazil naturally group themselves into the following five divisions:

(1) Short, isolated lines, extending inland from various ports north of Rio de Janeiro: (*a*) From Bahia to Joazeiro, on the River São Francisco, serving a cacao and tobacco region; (*b*) from São Felix due west about halfway across State of Bahia; (*c*) network about Pernambuco serving sugar, cotton, and cattle region; (*d*) short lines extending inland from other northern ports.

(2) Railroads radiating from Rio de Janeiro, chief port of Brazil: (*a*) Northeast through coffee and sugar country to port of Victoria; (*b*) north and northwest across the Serra de Mar into manganese region of State of Minas Geraes; (*c*) southwest to São Paulo.

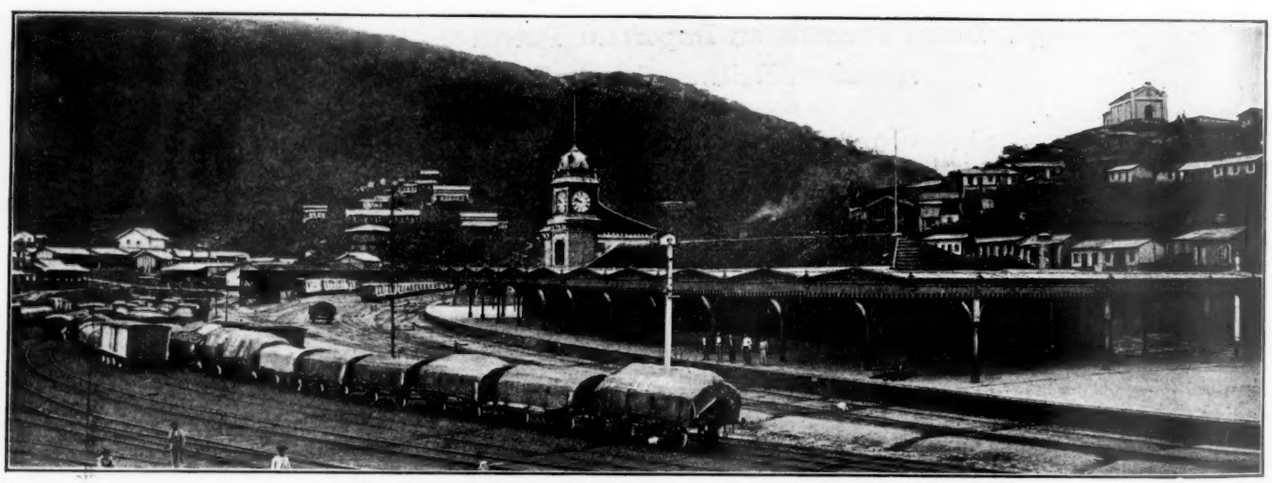
(3) Railroads radiating from São Paulo, center of coffee trade: (*a*) Well-equipped, double-tracked line southeast across Serra do Mar to port of Santos; (*b*) lines tapping coffee sections throughout State of São Paulo; (*c*) line south from São Paulo to town of Uruguayana, on Argentine border, and to Santa Anna do Livramento, on Uruguayan border, whence connections are made for Montevideo.

(4) Railroads connecting more important Southern ports with main line from São Paula to Uruguay: (*a*) From port of Paranagua Curityba, furnishing outlet for herva matte from forests of Parana; (*b*) from São Francisco inland, tapping lumber region; (*c*) from Porto Alegre inland through farming district which makes specialty of hog raising; (*d*) from Rio Grande do Sul inland.



On the Madeira-Mamore Railway

(5) Interior railroads: (*a*) Short line around rapids in the Madeira and Mamore Rivers from Porto Velho to Guajara Mirim; (*b*) from Bauru, in the State of São Paulo, westward across the sparsely populated State of Matto Grosso toward the Bolivian border; (*c*) a line in the State of Rio Grande do Sul extending from São Borja, on the Argentine border, south along the Uruguay River to Quarahim, on the Uruguayan border, a recently completed bridge across the Quarahim River furnishing connection with the Uruguayan system; (*d*) a short line in the State of Maranhao joining towns of Caxias and Cajazeiras. Caxias is on Rio Itapicuru, which is navigable from this point to the ocean; Cajazeiras is on Rio Parnahyba, navigable both up and down stream from this point.



The Alto da Serra Station of the Sao Paulo Railway

Classification by Ownership

Brazilian railroads may be classified according to ownership under the following seven headings. (See mileage table given in this report.)

(1) Lines owned and operated by the federal government.

(2) Lines owned by the federal government and leased

to private companies. These lease contracts usually extend over a period of 60 years, at the conclusion of which the system reverts to the government without payment. Provisional clauses of the contract provide for reversion with certain payments at end of 30 years or sooner should public interest so require. Work on uncompleted links and branches is usually done by the companies on the account of the government, and sections so constructed are incorporated in the system.

(3) Lines conceded by federal government with guaranty of interest. These railroads have privilege zones, usually reserved for them for 90 years. They also have a 6 per cent guaranty, gold or paper, on recognized capital, fixed usually at a certain amount per kilometer. These roads may be expropriated by government under certain conditions.

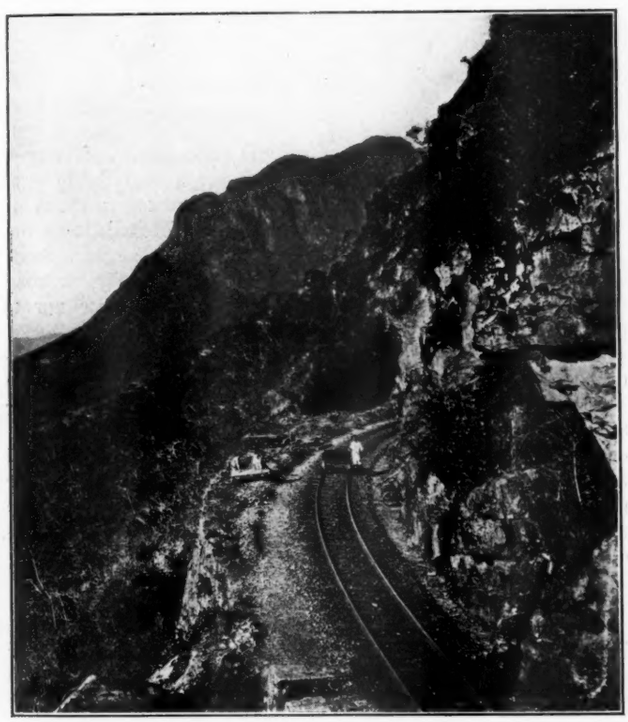
(4) Lines conceded by the federal government without guaranty of interest.

(5) Railroads owned and worked by states, which the latter may under certain conditions build or authorize within their borders.

(6) Railroads owned by states and leased to private companies.

(7) Railroads conceded by states.

In many instances a private company operates a portion of its system under a federal or a state concession and another part under a lease either from the government or a private company holding a government concession or lease.



A Scene on the Paraná Railway

Considerable confusion arises from the fact that federal railways are sometimes referred to as "State" railways.

Government Expenditures

The federal government has taken a keen interest in railroad development for many years. Formerly, concessions were freely granted, and promoters were given heavy guaranties on their capital, but as a result of this policy the country has been forced to finance these lines until the sections through which they penetrated should become sufficiently developed to allow a return upon the capital expenditure.

Some 15 years ago the government formulated a plan whereby, through a system of loans, it began the purchase of these roads, most of which have been acquired.

(In the report there follows a detailed survey of the principal railways but lack of space prevents the inclusion of the survey in the *Railway Age,* although much information of interest is given concerning the location of these railroads, their capitalization, dividends, business, mileage and equipment.)

Imports of Railroad Equipment

Practically all railroad equipment must be imported into Brazil. The following table shows the material decrease in the quantities of these imports between 1912, a normal prewar year, and two war years. The quantities are given in metric tons:

Articles and countries of origin	1912 Tons	1915 Tons	1916 Tons
Rails, fishplates and railway accessories, total.	234,718	5,312	8,887
Germany	34,940	373	.....
Argentina	276	29	1,065
Belgium	72,761	.....	.....
United States	51,971	4,309	7,579
France	57,149	1	3
Great Britain	17,344	597	240
Other countries	277	3	.....
Locomotives, total	16,791	1,494	3,564
Germany	5,985	.....	.....
Belgium	1,160	.....	.....
United States	8,272	1,054	3,519
France	10	.....	.....
Great Britain	1,359	440	45
Other countries	5	.....	.....
Axles, wheels and accessories for cars, total..	14,094	1,900	2,861
Germany	5,682	28	.....
Belgium	4,229	.....	.....
United States	2,207	1,340	1,976
France	122	4	2
Great Britain	1,847	525	883
Italy	7	.....	.....
Other countries	.....	3	.....
Cars, total	62,859	.....	.....
Germany	3,551	.....	.....
Argentina	67	.....	.....
Belgium	35,879	.....	.....
United States	17,285	.....	.....
France	736	.....	.....
Great Britain	5,163	.....	.....
Other countries	178	.....	.....

Note—No statistics giving the number of cars imported during 1915 and 1916 are available.

For a clearer perception of the effects of the war on Brazilian imports of railway material, the above table is supplemented by the following one, which shows the values in United States currency of the total imports of these commodities from the countries supplying the largest quantities:

Country of origin	1912	1915	1916
United States	$6,106,622	$745,784	$1,793,360
Great Britain	2,516,000	427,150	234,056
Germany	3,500,863	17,730	.....
Belgium	8,025,991	.....	.....
France	2,265,455	1,154	1,020

A fact which may be surprising to those who have not studied this trade minutely is that in 1912 Belgium was apparently safely ensconced as the leader in the field, with over $8,000,000 of exports to Brazil, nearly $2,000,000 ahead of the United States, which was second. The next nearest competitor was Germany, followed closely by France and Great Britain. With 1915 came the practical extinction of imports from Belgium and the dropping of the values of those from the United States from $6,000,000 to $700,000. In 1916 the American imports increased by $1,000,000, while others decreased. As far as the imports of railway materials are concerned, therefore, the Brazilian market is in a suspended condition. Speculations as to the possibilities for after-the-war competition are suggested by the 1912 figures.

Imports from United States

While the above tables were compiled from Brazilian statistics, covering calendar years, the following figures of Brazilian imports from the United States were taken from

official United States statistics for the fiscal years ending June 30. Apparent discrepancies are due to this fact.

Year	Locomotives Number	Locomotives Value	Rails Tons	Rails Value	Cars and parts	Spikes and track material
1912	92	$1,251,824	40,730	$1,187,462	$1,243,293	(a)
1915	1	12,185	4,224	128,082	45,197	$115,015
1916	11	177,294	4,097	137,092	51,296	179,589
1917	42	1,008,732	1,878	86,420	198,378	356,381
1918	11	325,076	418	26,454	.....	176,618

(a) Not specified.

Since 1912 there has been, with the exception of the 42 locomotives shipped in 1917, which are said to have been used for the hauling of manganese ore desired by the United States, a decreasing stream of supplies and repair material, falling to a comparatively unimportant quantity in 1918.

Late News from Washington

THE COMMITTEE on standards for cars and locomotives has aroused a controversy with a number of roads by proposing to abolish all distinctive lettering and colors for passenger cars and that all cars be painted standard Pullman color and lettered uniformly. The Pennsylvania particularly objects to having its red cars painted another color.

Purchasing Committee to Organize Stores Department

E. J. Roth, purchasing agent of the Chicago, Indianapolis & Louisville, is to be appointed manager of a stores section being organized by the Central Advisory Purchasing Committee of the Railroad Administration to exercise jurisdiction over the storekeeping departments of the railroads, some of which are now under the jurisdiction of the purchasing department, but some of which are under the jurisdiction of the operating department. It is proposed to organize a staff of storekeeping officials, one for each region reporting to Mr. Roth and to work out uniform plans for handling this department.

Train Service Employees Ask Further Increases in Wages and Time and One Half for Overtime

The wage increases granted by Director General McAdoo's General Order No. 27 are not sufficient to satisfy the organizations of train and yard service employees. The Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors, the Brotherhood of Railroad Trainmen and the Switchmen's Union of North America, have all filed requests for additional increases with the Board of Wages and Working Conditions. The requests, which include a proposition for time and one-half for overtime, were presented to the board at a hearing during the first week of this month and after consideration the board will make its recommendations to Director General McAdoo. The request of the yard employees also includes a proposition for time and one-half for work on Sundays and holidays. That of the other organizations provides for overtime in passenger service on a basis of a day of 100 miles or five hours, or a speed basis of 25 miles per hour, and in freight service a day of eight hours, or 100 miles, or a speed basis of 12½ miles an hour. This proposition formed an important part of the demands which led to the enactment of the Adamson law, but was withdrawn during the negotiations with President Wilson and repeated at the time the brotherhoods made their presentation before the Railroad Wage Commission. Director General McAdoo, in his General Order No. 27, granted the basic eight-hour day, but declined to grant the request for time and one-half for overtime.

The presentation before the Board of Wages and Working Conditions was made by A. B. Garretson for the conductors, W. S. Stone for the engineers, Timothy Shea for the firemen, W. G. Lee for the trainmen and S. E. Heberling for the switchmen's union. Mr. Heberling asked for an increase sufficient to make the rates for foremen and helpers 50 per cent over the rates in effect on January 1. He also presented a request for the yardmasters and assistant yardmasters, saying that they did not desire to be classed as officials. W. G. Lee was prepared to submit a request for yardmasters, but was told that they had been classified by Director General McAdoo as officials and their rates of pay would be handled by him. Mr. Lee objected because the regional directors had negotiated with the yardmasters direct instead of through the organization.

The brotherhood officials each presented a series of demands designed to preserve relationships which had formerly existed between the various classes of train employees and which they said had been thrown out of line by the general wage order, and they also wished to standardize upward to remove the discrepancies which resulted from the application of the general order to varying rates of pay on the different roads. They made various comparisons between the wages received by various classes of employees with those received by other classes. Mr. Stone, for example, pointed out instances where comparatively inexperienced firemen are receiving higher pay than experienced engineers and he made several comparisons between the wages of engineers and the comparatively unskilled classes of shop employees. He said the engineers do not receive enough pay and their requests were not given the consideration they should have been in the previous investigations of wage schedules.

Mr. Shea, for the firemen, presented a schedule of rates requested, ranging from $4.50 to $6.82 per day in place of rates granted under General Order No. 27 ranging from $2.46 to $5.47. He said this does not provide for a general standardization, but minimum standards of wages. The brotherhood leaders generally declared that the general wage order had given only very small increases to many of the employees and that the increases in general were not sufficient to meet the increased cost of living. Mr. Stone also charged that no attention is being paid by railroad operating officials now to the hours of service law nor to getting trains over the road expeditiously.

It was also brought out in the discussion that the brotherhood leaders two or three months ago filed a request with Director General McAdoo asking him to do away with the age limit and other restrictions as to physical condition governing the employment of train employees. Mr. Lee said that the purpose of this was to release the younger men for railroad service in France, where 65,000 railroad men are now employed and where he said the war department required 120,000 men by next June.

Contract Negotiations

The execution of contracts between the Railroad Administration and the railroad corporations for the use of their property during federal control is being delayed by the time necessary to consider the applications for special compensation above the standard return which have been made by about 80 of the companies. The amounts claimed as special compensation range from small sums up to as high as $15,000,000, although in most cases the amounts have not been definitely stated, but in the oral arguments that have been made and the briefs filed on behalf of individual companies the conditions which are taken as the basis of the claims have been fully outlined. Counsel and executives of the various railroads are in constant conference with the representatives of the law department of the Railroad Administration in connection with these matters and other details in connection with the contract. While several companies have accepted the standard clauses for the contract as offered by Director General McAdoo on September 5, and some companies which have not made claims for special compensation have approved the contracts, none of them have yet been signed by the director general and recently some changes in the standard contract have been allowed.

Bridge and Building Men Have Live Convention

Committee Reports and Papers Create Much Interest at the Meeting Held This Week in Chicago

THE TWENTY-EIGHTH ANNUAL CONVENTION of the American Railway Bridge and Building Association was held at the Hotel Sherman, Chicago, on Tuesday, Wednesday and Thursday of this week. A large part of the papers and committee reports presented were of particular application to the problems now confronting the railway men of the country in doing their part toward the effective prosecution of the war.

The officers of the association during the past year were: President, S. C. Tanner, master carpenter, Baltimore & Ohio, Baltimore, Md.; first vice-president, Lee Jutton, division engineer, Chicago & North Western, Chicago; second vice-president, F. E. Weise, chief clerk, engineering department, Chicago, Milwaukee & St. Paul, Chicago; third vice-president, W. F. Strouse, assistant engineer, Baltimore & Ohio, Baltimore; fourth vice-president, C. R. Knowles, superintendent, water service, Illinois Central, Chicago; secretary and treasurer, C. A. Lichty, inspector, purchasing department, Chicago & North Western, Chicago.

The convention was called to order at 10 o'clock Tuesday morning with over 100 members present. The opening exercises were confined to the presentation of reports of officers and standing committees. The report of the treasurer showed a surplus for the year of over $100 and a balance in the treasury of $1,044.

Repairing and Strengthening Old Masonry

It has been deemed advisable to refer, in more or less detail, to the report submitted by the masonry committee of the American Railway Engineering Association in 1911, in which the more common causes of masonry failure are given. While this deals particularly with concrete construction, it is applicable in its essential features, to all classes of masonry. The following causes are mentioned:

(1) Faulty design: (a) Where masonry is placed on a grillage above the water line, or where the water level is lowered after construction, causing the grillage to rot and allowing the masonry to settle. . (b) Where the grillage rests on piles and where the designer used too high a stress for timbers in compression. (c) Where the wing walls of U-abutments were built too light. (d) Where the designer used too high a bearing pressure on the earth, or foundation piles. (e) Settlement of the body of a structure causing cracks to appear where the wings leave the main portion of the structure or, in the case of arches, at points back of the parapets. (f) Lack of proper drainage.
(2) Poor material or poor workmanship.
(3) Temperature cracks.
(4) Disintegration of the masonry. (a) On account of the alternate freezing and thawing of exposed surfaces. (b) On account of exposure to salt water, alkalies, acids or heat.
(5) Improper filling.
(6) Scour caused by (a) freshets, (b) driftwood, wagon bridges, etc., lodging against the masonry, (c) ice gorges or (d) inadequate waterway.
(7) Sliding material.

FAULTY DESIGN.—If settlement resulting from faulty design, cases (a), (b) and (d), is not uniform in large structures, they will probably crack unless reinforced to prevent settlement cracks. The abutment could be divided into sections by vertical planes and prevent unsightly cracks.

In the case of arches (f) under high fills and supported on ordinary soils it is difficult to prevent cracking of the abutments and ring unless reinforcement is used, on account of the pressure on the foundation in the center of the arch being much greater than at the ends of the wing walls.

POOR MATERIAL OR WORKMANSHIP.—Failures from these causes can be avoided by proper care. Portland cement, as now placed upon the market, is very reliable and few failures can be traced to this important ingredient. The use of dirty sand or a poor grade of stone generally rests with the engineer. Workmanship cannot be controlled as readily where inefficient or unskilled labor is employed. However, a competent inspector can generally get satisfactory results.

TEMPERATURE CRACKS.—Temperature cracks will usually occur in long walls, although some railroads report uncracked abutments built of plain concrete in lengths of 60 to 100 ft., and of reinforced concrete in lengths of 150 ft. Expansion joints are generally introduced at intervals of from 40 to 50 ft.

DISINTEGRATION OF THE MASONRY.—Disintegration, case (a), can be prevented in arches and to a great extent in abutments and retaining walls by proper waterproofing. Very little protection to exposed surfaces, however, can be provided beyond the use of the most durable material available, placed in a thoroughly workmanlike manner.

IMPROPER FILLING.—A properly designed monolithic structure will resist failure, due to careless or improper filling better than a structure built in sections. This is another instance where proper inspection and supervision can be exercised to good advantage.

SCOUR.—In designing structures over streams the size of openings should be such as to take care of the maximum amount of water that is likely to come to the opening. Should the scour extend below the foundations, the structure is liable to settle forward or bodily downward. A monolithic structure will resist failure better than one built in sections, but cracks are liable to occur in either event. Complete failure in many instances can be prevented by relieving the pressure at the back or by placing struts across the opening.

SLIDING MATERIAL.—A properly designed monolithic structure will resist failure due to sliding material better than a structure built in sections.

It is a fact that many masonry failures are not due to any of the seven causes mentioned, but to overloading the structures. Very positive proof of this assertion can be found upon looking into the history of two of the oldest masonry structures on the Baltimore & Ohio.*

The second bridge, while not quite as old, is of greater historical value. It is known as the Thomas viaduct, and crosses the Patapsco river at Relay, Md., about eight miles west of Baltimore. It is a double-track structure consisting of a series of eight semi-circular arches, each having a span of 58 ft., at the springing line, the total length being 612 ft., with a height of 59 ft.

To the writer the most remarkable feature surrounding these old bridges, is the fact, that they were designed when the equipment in use was undoubtedly lighter than the present day automobile truck. Notwithstanding this fact, they are today carrying as heavy traffic as any bridges in the country, and bid fair to continue to meet growing demands for many years to come. They stand as monuments to the engineers in whose minds they were conceived.

J. P. Canty, division engineer of the Boston & Maine, advised that the practice on that road in repairing old stone masonry has been confined almost wholly to raking out the joints and pinning and pointing them, or in some cases simply pointing. When the masonry was in such condition that this method will not be effective and economical it was torn down and rebuilt, although in some cases structures have been saved by buttressing and reinforcing bulging or otherwise defective masonry with iron or concrete or both.

*The older of these at Gwynn's Falls near Baltimore was described in the *Railway Age Gazette* of August 17, 1917, page 278.

Discussion

This report brought out considerable discussion, particularly regarding the serviceability of old masonry, the consensus of opinion being that structures are frequently condemned when they could be carried over with minor repairs.

L. D. Hadwen (C., M. & St. P.) emphasized the fact that prevention is better than cure and stated that masonry does not receive as careful inspection as steel structures. Steel bridges are strengthened as soon as deficiencies occur but masonry which is being overloaded or which is showing signs of failure is not relieved as promptly. One common source of trouble with masonry structures is deficient drainage in the embankments back of the structures. He urged special consideration of this problem and the adoption of such measures as may be necessary to insure the prompt escape of water.

A. Montzheimer (E. J. & E.) described the reinforcement of a center pier on a double track drawbridge across the Grand Calumet river at South Chicago. This pier was supported on piles cut off well below the water line but extending several feet above the bed of the river. With this form of construction there was serious vibration. To provide a more stable structure a cofferdam of steel sheet piling was driven around the pier. Additional piers were driven inside the cofferdam after which it was filled with concrete deposited under water. This form of construction removed the difficulty.

Essential Work

By C. A. Morse

Assistant Director, Division of Operation, United States Railroad Administration

We have a condition before us that we have to meet; that is, the scarcity of labor and of material with a heavy business on our railroads. Our problem is to determine how are we going to take care of this business safely under these conditions.

We all know that it is possible to extend the life of pile and timber trestle bridges indefinitely, by replacing the separate items that go to make up the structure from year to year, also in ordinary times it has been considered wise to renew a structure completely when it has reached a certain stage, using the salvage for repairs that would otherwise require the purchase of new material. Now with both labor and material obtainable only in limited quantities, and knowing that we can carry a structure over with perfect safety only by making partial renewals it is up to us to do so. Again we are using, or have been using, large quantities of treated material, especially creosoted materials, in the past 10 years. Today it is impossible to get creosote in sufficient quantities to fill our requirements, while to renew bridges completely with untreated material, means a comparatively short-lived structure. Therefore in repairing structures to extend their life from one to five years, we should use untreated material as it is much easier to secure this than the treated timber.

A few years ago, railroads could borrow money to take care of additions and betterments for 4 per cent and under those conditions it was not economical to spend over 4 per cent of the cost of renewal in repairs that would extend the life of the structure one year. As labor and material were costing much less then than now, this did not permit of very extensive repairs being made. Today, money for additions and betterments expenditures is costing from 7 to 10 per cent. and labor and material, when they can be had at all, are from 50 to 200 per cent higher than they were a few years ago. These conditions are due to the war which we all hope and believe cannot last over one or two years longer at the most, and they will then be changed. Therefore, we are warranted in making large expenditures for repairs at this time, especially for repairs that will extend the life of the structure until after the war, when renewals can be made for probably 25 per cent and possibly 50 per cent less than they can be made for at this time.

It behooves us, therefore, to make a careful inspection and study of each structure, and if we can repair it, so as to make it good for say, four years, for 40 or 50 per cent of what it would cost to renew it in full, we should make the repairs. If we can make repairs that will extend the life of the structure one year for say, 7 per cent, two years for 8 per cent per year, or three years at 9 per cent per year on the cost of renewal, such repairs should be made. It will be seen that if this policy is carefully carried out, we will be able to get through 1919, with few if any full renewals of pile and trestle bridges, and in doing so, there will be a very great saving made in both labor and material, especially in the latter.

The same careful inspection and study should be made of our steel structures. In the first place, they should be kept well painted as nothing gives added life to a steel bridge for so little money as this. Many structures that are a little light can be taken care of by strengthening if on important main lines, and by reducing speed of trains on less important lines.

We are all ambitious to improve the class of structures on the territory under our jurisdiction. We must put such work on the shelf, and bend our efforts toward holding to what we have, leaving such things to be done when we are not fully occupied in the one great task of winning the war. We can afford to stop the wheels of progress temporarily, as, if we do not win the war, there will be nothing to make progress for.

We all have cases where we have waterways that are not large enough for the area drained. Many of these have been in this condition for years. We naturally are trying to remedy them a little at a time, and rebuild some each year. We should not do any of that class of work during these times, unless at a point where washouts have occurred recently, and then only if we find that there have been previous washouts at these same places within the last two or three years. We can afford to take a chance where this is the only washout at that point for 6 to 10 years.

On building work, the question of replacing old depots is usually up to the management and as there is little chance of state or local authorities making demands for better depots at this time, repairs to present structures are about all that you have on that class of structures.

While you cannot do much new building work, you should endeavor to keep the present structures painted, both for looks and to extend their life. This applies not only to structures, but to roadway signs. In keeping the latter well painted you add to the safety of operation. Signs are erected for a purpose; in order to serve that purpose they must be seen, and a well painted sign is more readily seen, and attracts attention quicker than an unpainted, weather-stained sign, that looks as though it was obsolete, and was there only because some one had neglected to take it down. The actual cost of painting roadway signs is small, and there is nothing on a railroad that makes it look more alive and up to date than well-painted roadway signs.

There is one thing in connection with buildings where you have it in your power to make a great saving; that is in connection with the heating. It is surprising to see how little attention is paid to keeping depots and mechanical buildings like shops and roundhouses tight so as to keep *out* the cold, and keep *in* the heat. Good work can also be done in keeping steam, water and air pipes and valves tight and preventing leakage, which means fuel for pumping water

and air, and making steam; there is no comparatively small maintenance matter where so much can be saved as this. Steam pipes should be lagged, windows and doors should have weather strips, floors should be kept tight, and the bottoms of buildings where cold can get under the floors should be boarded or banked up, broken window panes should be replaced promptly, and every effort should be made to save fuel. In many cases in the northern climates, double windows and storm doors should be provided.

In many sections of the country, and probably on nearly every railroad, there still remain some wooden platforms at depots. As these require renewal, they should be replaced with stone screenings, gravel, cinders or something of that class, (on earth filling if required) and eliminate the use of wood in these platforms. This applies to small stations where it is not planned eventually to put in brick or concrete platforms.

I always associate a master carpenter with the old time freighter, who had on the back of his wagon a "Jockey Box," in which could be found anything from baling wire to a wagon-hammer. If anything happened on the road, he could always find something in his jockey box with which to repair it. A master carpenter's headquarters shop together with outlying buildings is usually a big "jockey box" from which he can dig up something with which to do any ordinary job without waiting for the material ordered on his requisition to show up. If you have not already found it necessary to do so, I would suggest that you clean out the box, and get all of this material into use; it is no time now to have material lying around idle, with the idea that it will come in handy sometime; now is the time when it should be used.

Among the things that accumulate on a bridge and building foreman's hands are packing, O. G. washers and chords, and sway brace bolts, especially where wooden bridges are constantly being replaced with concrete structures or pipe. I have noticed that it was hard to separate a foreman from this class of material but all surplus material of this kind and all metal scrap should be shipped in to the storekeeper now, while they are both so valuable.

I want to say a word to bridge engineers regarding their second-hand material yards or their jockey boxes. They should be inspected carefully; material that can be useful for strengthening bridges should be kept; girders and I-beams that can be doubled up, should be listed and used as soon as possible and the balance scrapped.

It has been customary to save a lot of light girders and pony trusses for possible future public road crossing use. I believe we are warranted at present prices in scrapping all such as we will probably be able to buy new spans, designed purposely for road crossings, by the time we would use these, and get them for less or at least no more than we can get for these at this time.

There is always an accumulation of odd sizes of timber which is not standard. Now is the time when bridge engineers, architects and master carpenters should get a list of this material, and, regardless of standard plan buildings and odd structures so as to use it up. By this means we will get rid of a lot of dead stock and turn it in at an extremely high price.

There is usually an accumulation of window frames and sash, door frames and doors, window weights, etc., that should be used. Glass, like everything else, is high, and by getting after this matter, we can use it at this time, and by so doing, clean up the odds and ends. The same process should be applied to anything that the store department has on hand that is not being called for because it is not standard on that particular road for the time being. Material is too scarce, and costs too much money in these times to be finicky about standards.

The Material Situation

Following the presentation of Mr. Morse's paper there was a discussion of the material situation. Dr. Hermann Von Schrenk described the conditions existing in the lumber industry and outlined the increasing scarcity of bridge and building timbers owing to the large demands of the army and the shipping board. He emphasized the importance of salt boxes on untreated timber piling and other expedients to increase the service secured from timber. He also reviewed the situation existing in the timber treating industry and emphasized the necessity of conserving preservatives for the most essential needs. He also emphasized the necessity of using native timbers to reduce the demand for transportation and stated that it is now necessary to use timbers which in many cases have not been considered desirable before. He also called attention to the necessity of giving more attention to the protection of timber bridges from fire because of the increasing age of these structures.

The Steel Situation

Conditions in the steel market were described by T. C. Powell, member of Priorities committee of the War Industries Board in a written communication. In this report Mr. Powell described the work of the Priorities division, stating that it is divided into two divisions; one supervising construction which is immediately connected with the prosecution of the war, and the other, the construction which is non-war.

The division in charge of non-war construction not only controls the amount of steel necessary for such construction, but also carries out the plan under which no construction costing above a certain sum can be started without a permit. This division has also undertaken to secure a report from the entire country listing all the building now in progress, including private residences as well as manufacturing plants.

It is recognized that in certain types of construction steel is an essential material, but the Facilities division does not accept the mere statement that the style of construction decided upon necessarily requires steel, but goes further into the projects to develop whether or not the type of construction cannot be changed without incurring additional expenses and by substituting other available materials, the use of which will conserve steel.

The same program is carried out in connection with railroad construction, and in many cases the plans of the railroads or of the contractors working for the railroads, have been modified, substituting concrete for steel, and in some cases, substituting wood for steel.

In the case of bridge construction, the railroad submitting plans for a new bridge, or the replacement of an old one, is asked to limit the use of steel to the minimum. In the case of shop buildings, the steel is limited to those parts of the building for which it is proved that no other type of construction is possible. Water tanks and fuel oil tanks are being constructed of concrete.

Sources of Railway Water Supply

The water supply of any region except the deep underground waters from porous beds which are supplied from a source perhaps many miles away, is abundant or deficient according to the character of the rainfall. Of the water falling as rain, a part of the precipitation flows into the lakes and streams and to the sea, a part is held by the vegetation and soil and is evaporated by the sun directly, or through plant growth, and a third portion is absorbed by the earth and penetrates the pores and fissures in the rocks, loose sands and clays below the surface, accumulating in the porous strata from which it is secured by sinking wells.

The normal annual rainfall throughout the country has

been estimated at 29 in., and the area is divided in this respect into the following classifications: Deserts, or arid lands 10 in.; semi-arid, or light rains, 10 to 25 in.; moderate, 25 to 50 in., copious, 50 to 75 in., and excessive above 75 in. According to the latest record, less than 6 per cent of the area of the United States is in the excessive rainfall class, exceeding 75 in. annually, 16 per cent ranges from 50 to 75 in., 25 per cent from 25 to 50 in., 30 per cent from 16 to 25 in. and 20 per cent less than 10 in. The difficulty in providing an ample supply at all seasons from many of the streams and other surface supplies lies in the fact that the rainfall is not equally distributed throughout the year.

Streams and Lakes

Small streams, if sufficient in quantity, present but few difficulties in establishing a pumping station. On rivers and the larger streams, where the stage of water varies beyond the limits of ordinary suction lift the proper location of pumps with reference to the varying stage of water is essential to satisfactory operation. Streams usually carry considerable matter in suspension and the problem of protecting the intake lines from mud, sand, leaves, etc., is quite important. The matter carried in suspension by the water of streams may be removed readily by settling basins or filtration, and the water is usually of a good quality except where the streams are polluted by sewerage or industrial wastes. Smaller streams are often affected by organic and vegetable matter, especially after a prolonged dry period followed by light rains. This condition accounts for a great deal of the trouble experienced from foaming and pitting, by water that is usually considered good boiler water.

The smaller lakes and ponds usually offer the most favorable conditions for establishing pumping stations, both as to construction and quality of water. They are affected but little by storms, and difficulties from the effects of currents common with the larger lakes are not encountered. While the quality of the water of the large lakes is uniformly good the effects of currents and storms sometimes cause a great deal of trouble from turbidity and sewerage pollution, as well as stoppage of intakes, if they are located near the shore.

Reservoirs

Impounding reservoirs are frequently found necessary for the storage of water when a suitable supply is not available from other sources. Where the reservoir is dependent either on a stream or water shed for supply, the storage should be sufficient to provide for the evaporation and absorption that will take place in addition to the normal consumption. The factors to be considered are, the humidity, area of reservoir, depth of water, temperature, proximity of forests and other local conditions. The absorption will depend entirely on the character of the surface and sub-strata, and unbroken sub-strata of clay or hard pan form the best possible bed for a reservoir as the absorption through a formation of this kind is less than through any other than an impervious rock. The rainfall will have to be considered carefully in connection with the watershed to determine the catchment area required. The size of spillway will depend on the rainfall and catchment area and should be large enough to take care of the maximum run off over the entire catchment area.

The successful operation of a railroad using steam as a motive power requires that the supply of water be equal to the demand at all times. The consumption will vary greatly and the available supply should be sufficient for the maximum requirements with a safe factor to provide for future increased consumption. Provision should also be made for water for other than locomotive supply at terminals and other points where such water is required. The immediate supply should be sufficient for a demand at least 50 per cent over the normal requirements to provide for fluctuations in consumption and extraordinary movements of trains following temporary obstruction of traffic or other reasons. In considering a source of supply, accessibility is secondary to the quality of the water. An ideal water for locomotives is one that will not form scale or cause corrosion, pitting or foaming.

The dam is perhaps the most important feature in connection with an impounding reservoir and too much attention can not be given to its construction. The foundation must be sufficiently firm to prevent settlement. The connection between the foundation and the dam must be of the best to prevent leakage and shifting, or sliding. Earth dams are most commonly used on account of their cheaper construction, and when properly built are quite as satisfactory as any other construction.

Wells

A deep well is not always the most satisfactory method of securing water, as, where the head is far below the surface, the cost of raising the water is excessive, but surface conditions are often such that the only available water supply is that secured in this way. Well waters, as a rule, are pure and clear, although many are very hard. A hard water is not objectionable for drinking purposes, but is unsatisfactory for boiler use. The majority of well waters respond readily to treatment and as a well is usually drilled only when all other possible water sources have failed, there is no choice other than to use the water in its natural state or resort to treatment.

An intelligent knowledge of the presence of underground water can be secured only by a careful examination of the locality in which the well is desired and of existing wells in the vicinity. From the existing wells and local geology, it is often possible to determine the exact depth of the water-bearing strata and the quantity as well as the quality of water it is possible to secure. The ground water level has lowered decidedly in certain sections of the country. While this decline has not been confined to any particular section, it has been marked in Indiana, Southern Michigan, the Great Plains and in Southern California.

C. R. Knowles, superintendent, water service, Illinois Central, Chicago, chairman.

Wooden Tanks

By C. R. Knowles

Superintendent Water Service, Illinois Central, Chicago

The subject of wooden tanks appears to be a timely one in view of the present steel situation and the fact that the concrete tank has not been developed to such an extent that it can replace either steel or wood entirely in tank construction. Within the past few years steel tank construction had largely supplanted that of wooden tanks on railroads on account of the low cost of production, improvements in design and the increasing scarcity of suitable timber. A surprising feature of the situation has been the fact that the manufacturers of wooden tanks do not appear to be alive to the situation and the opportunity to push their product. In spite of this apparent apathy on the part of the wooden tank manufacturers there has been a decided increase in wooden tank construction on railroads which has been further augmented by the ruling of the Railroad Administration prohibiting the use of steel plates for the construction of water or oil tanks, except in high tanks where it is essential.

The subject of timber suitable for wooden tanks will be dealt with lightly here as the committee report on railway water tanks in the 1915 proceedings of the association goes into the question of tank timber extensively and but little can be added at this time. At the time the 1915 report was written cypress predominated as a tank material, while at the present time redwood probably predominates with Douglas fir a close second, although cypress is still being used to

a large extent, but at a greatly increased cost. Heart red cypress, of course, leads all available timbers in tank construction for long life although the scarcity of this admirable timber is growing more apparent year by year. Redwood is beyond a doubt second only in permanency to cypress. Douglas fir and southern heart pine are about of equal value as tank material with a life of approximately 10 years.

There has been but little change in the design of circular wooden tanks since their first construction, as it is obvious that this type of tank will permit of but slight modifications, although there has been a wide variation in size, the capacity increasing with the greater demand for water and the necessity for additional storage. The only marked change in wooden tank construction from the earliest form to the present type has been that of eliminating the taper of the staves. The sectional hoop with lugs and bolts has now replaced the solid hoop as it was found more satisfactory, especially for the larger tanks. Consequently the necessity for tapering tanks has been eliminated.

When the fibers of the wood comprising a tank are thoroughly saturated with water, decay is practically impossible; on the other hand if the wood was perfectly dry there would be little likelihood of decay. In water tanks, however, there is always an intermediate condition of moisture in which the wood is dry on the outside and wet on the inside, thus promoting rapid decay unless the timber has been carefully selected and has a relatively long life.

It is difficult to point out any portion of the tank more susceptible to decay than another, although the tops of the staves probably decay more quickly than any other part of the tank. If this is true it is very likely caused by a wider variation in the degree of saturation owing to the tank being filled and emptied. One of the arguments put forth in favor of roofs on tanks is the protection given the tops of staves. The advantage of a roof in the prevention of decay in the staves is extremely doubtful, as the only function it can perform is to keep them dry, which is obviously impossible in a tank used for the storage of water. Poor inspection of timber is responsible for much of the decay in wooden tanks. A few poor staves in a tank will cause trouble even if the remainder of the staves are perfect.

Creosoted Tanks

The Illinois Central has recently started to use creosoted timber in the construction of its wooden water tanks. Nine of these tanks constructed during the past year proved so successful that this road is now building more and has practically made the creosoted tank its standard. Creosoted tanks were resorted to on account of the high price and great demand for steel for other purposes than tank construction, and the scarcity and cost of timber that would be suitable for use without treatment.

The creosoted tanks built by the Illinois Central are of their standard sizes, of 100,000 gal. capacity with a 20-ft. stave and 30-ft. bottom, and 50,000 gal. capacity having a 16-ft. stave and a 24-ft. bottom, no change having been made in the plans formerly used for the construction of untreated wood tanks. The timber used is loblolly pine, coming under the general specifications for tank timber except that no restrictions are made as to heart or sap. The timber is air seasoned and should be permitted to season for three months in favorable weather. The method of treatment employed is the Rueping process, using about 5 lbs. of oil per cu. ft. of timber. The oil used is a coal tar creosote, coming within American Railway Engineering Association No. 1 specifications. The tank towers, constructed of 12-in. by 12-in. posts and 6-in. by 8-in. braces, roof, frost box, ladder and all timber entering into the complete structure is creosoted. A very important feature in the construction of these tanks is that all timber more than one inch in thickness is framed before treatment so that it is rarely necessary even to bore a hole in the treated timber during the field erection of the tank.

When one discusses creosoted tanks for the storage of water the question is immediately raised as to the effect of the creosote on the water. The Bureau of Industrial Research of the University of Washington conducted extensive tests of creosote wood stave pipe to determine its effect upon water for domestic and irrigation purposes, and the conclusions were that there was no detrimental effect of the creosote on the water. These conclusions were borne out fully by the results on the Illinois Central where the creosoted tank has proven an unqualified success.

Frost Proofing

A wooden tank is in itself a certain protection against frost. No frost proofing is required for the tank proper throughout the greater portion of the country and in few cases is any required even where the most severe cold weather prevails, providing the consumption of water each 24 hr. equals the capacity of the tank. This, of course, applies only to the tank, as the inlet and outlet pipes will have to be protected against frost where a freezing temperature exists. The most effective frost box is one constructed with one or more air spaces. The walls should be of dressed and matched lumber and lined with building paper to make them as nearly air tight as possible. More frost protection is always required where surface water is used than with water from wells, as the temperature of well water is usually above 50 deg. F., while the temperature of surface water is often only slightly above the freezing point.

No set rules may be applied to frost protection, as weather and other conditions vary so widely throughout the country that uniform practice is out of the question. The factors governing are: (1) source of supply and initial temperature of water; (2) minimum temperature prevailing and duration of temperature below freezing, always remembering that a temperature of 20 deg. below zero maintained for two weeks offers a far more serious problem in frost proofing than 40 deg. below for two days; (3) size of inlet and outlet pipes, and whether flow of water is continuous or intermittent; (4) consumption of water in relation to the storage capacity of tank. Wherever possible artificial heat should be dispensed with as stoves are responsible for more than 50 per cent of the tank losses from fire.

Discussion

In answer to a question concerning the use of creosoted tanks by other roads, Mr. Knowles stated that he understood that they had been used to limited extent by the Louisville & Nashville and by the Cleveland, Cincinnati, Chicago & St. Louis. As to the effect of the creosote on water he stated that a slight taste was noticeable at first but that this soon disappeared. J. P. O'Neil (N. Y. C.) asked if the creosote affected the hands, face or eyes of the workmen when erecting the tanks and Mr. Knowles stated that he had heard of no difficulty of this kind.

There was also considerable discussion on the durability of tanks built of untreated material and Mr. Knowles called attention to the fact that the proper selection of materials was of the greatest importance. He cited the cases of three cypress tanks built in 1904, 1907 and 1911 respectively. The one first built proved to be in better condition than the others and after being reconstructed following a life of 4 to 10 years, the use of specially selected material gave better tanks than at the time originally built.

W. A. Alexander (Bangor & Aroostook) described his experience with tanks of untreated material and cited instances of long life obtained with them. He emphasized the superiority of wrought iron hoops as compared with steel and stated that he frequently reinforced tanks having flat hoops by putting round hoops between the flat ones. In discussing the proofing of tanks he mentioned the tendency to decay

produced by enclosing the tank retaining the moisture forming on the outside. He discouraged the use of large kerosene lamps as dangerous and preferred the use of stoves. J. P. Wood (P. M.) described the installation of steam coils in frost boxes and steam pipe pits where steam pumping plants were in operation. He also reported having used asbestos covering over water pipes with satisfactory results.

Carrying Bridges Over

By C. F. Loweth

Chief Engineer, Chicago, Milwaukee & St. Paul, Chicago

This paper outlined the general considerations to be observed in studying bridges and described the "classification" of old bridges as conducted on the Chicago, Milwaukee & St. Paul. This involves the determination of the load-carrying capacity of the structures in terms of the arbitrary "Cooper" locomotive loadings, together with the like classification of all locomotives owned by the road as well as any others that may be operated or transported over any part of the lines. With this information available it is possible to determine very quickly and accurately whether or not a given bridge can carry a certain engine safely.

Practical considerations of speed restrictions, loading schedules, and common sources of limitations on the capacity of bridges were also discussed. An abstract of this paper will be published in the next issue.

Discussion

This report created much discussion. E. T. Howson (*Railway Age*) called attention to the fact that roads are now justified in making heavier expenditures to carry bridges over than in previous years because of the abnormal cost of new work. L. D. Hadwen (C., M. & St. P.) emphasized the necessity of giving more than the usual consideration to bridge inspectors' recommendations for the renewal of bridges as these inspectors are inclined to play safe. J. S. Robinson (C. & N. W.) urged the more frequent inspection of old bridges as a means of carrying them over without danger. L. Jutton (C. & N. W.) called attention to the fact that many minor repairs are made by local foremen with little supervision and that the old standards under which these men are working should be revised because of present conditions. A. S. Markley (C. & E. I.) urged close attention to the removal of decayed timber in pile bridges in order to eliminate the fire hazard, urging that sap rot be cut off promptly. F. E. Schall (L. V.) emphasized the importance of closer supervision and instruction of foremen than in previous years in order that they may adopt all reasonable measures without endangering traffic.

Shipping Company Material Economically

The government has placed orders for 100,000 cars, but we need at least 150,000 cars for replacements alone this year. The cars on order will add only 4.3 per cent to our car equipment while the wear and tear of ordinary service depletes our supply 4 per cent. To help meet this condition every one of us must endeavor to contrive the quickest and most economical way to handle material, and release cars with greater despatch and with the least possible labor.

The first thing to be considered is loading properly and to car capacity. In this the user must keep in close touch with the storekeeper. On one road, what is known as a supply train is run. This train has a regular schedule and all parties in need of supplies must have their orders in at least six days before the train leaves the division storehouse. Light supplies are loaded in box cars and heavy supplies in gondolas in order that they can be unloaded by air unloaders. This supply train gathers up surplus materials and scrap along the line at the same time and in the same manner as it unloads it. This method is economical and successful. Where there is a quantity of light material for various points on different divisions car loads of this kind of material can be handled by loading the cars to a transfer point where the lading is transferred to cars which can be loaded to capacity for that point direct. In handling our supply trains all parties interested in receiving materials are advised of the day of their arrival and as nearly as possible the time so that they will be on hand to receive and help to unload their supplies, thereby avoiding delays. In handling bridge materails which are not too heavy single-end air unloaders are a valuable help. These unloaders can be built very economically and cost about $1,000 in addition to an old flat car properly strengthened.

To insure safety and promptness in handling materials and the quick release of cars there must be harmonious co-operation on the part of all concerned. Also if the division car service man would send a statement each month to each person on his division responsible for the prompt release of cars, showing the time cars were received for unloading and the time released and returned and classified in order as to standing in promptness in releasing cars, an incentive would be created that would result in much good to the car service. In planning work it may be classified under the following heads: (1) emergent. (2) urgent. (3) routine. Emergency work includes that which demands immediate attention and supersedes all other work. Urgent work is that by which the greatest good to the service can be obtained through the release of cars. Routine work is that which follows in its turn as orders are received.

Z. T. Brantner, shop superintendent, Baltimore & Ohio, Martinsburg, W. Va., chairman.

This paper created considerable discussion, several members urging the importance of closer co-operation with the supply department in the handling of company materials and in unloading cars promptly. It was the consensus of opinion that although progress has been made in this direction further improvements can be effected.

Labor Saving Equipment

The committee on labor saving equipment, F. E. Weise (C., M. & St. P.) chairman, presented a report directing attention to the necessity for using all devices which conserve labor; the committee mentioned several well-known devices which are deserving of more general use.

Bridge Decks and Guards

The committee was impressed with the practical agreement as to the use of T-rails for inner guards on the various roads. Generally second hand and scrap rails removed from running tracks or from stock are used. An old frog point, or a point casting, is used where facing the traffic and in a few cases also where trailing the traffic.

Points are of course used at each end of a single track bridge, the distance from bridge ends varying from 30 ft. to 90 ft. The distance between the heads of running rails and guard rails is found to vary between 8 in. and 10 in. However, 8-in. and 9-in. spacings predominate. It is not clear in some cases whether the inner guard rail is spiked to every tie or every other tie.

The decks of timber bridges have been covered in previous reports. It is noted, however, that 8-in. by 8-in. ties, 10 to 12 ft. long seem to be the most popular for decks of timber trestles, with 6-in. by 8-in. outer guard timbers generally in use.

For open floors in steel bridges, the general practice seems to be as follows: Every second or third tie is bolted to steel

stringers or girders, outer guard rails are generally bolted to every third or fourth tie by means of machine bolts or lag screws, and inner guard rails are usually spiked to every second tie, and in a number of cases to every tie. Most of the information received did not indicate whether tie plates were used under running rails on ties or bridges. We assume that railroads using tie plates under rails on ordinary ballasted tracks on roadway would likewise use them on bridges. One road reports the use of tie plates also under the inner guard rail.

It is suggested that railroads working up new standards of practice should be governed by the following principles, so far as steel spans are concerned: A constant distance should be maintained from center to center of stringers, and of girders up to considerable span length; no change in size of tie will then be found necessary. The width of deck and the distance "in to in" of outer guard rails may thus be kept uniform, which will give a good appearance, and also reduce the number of sizes of sheets of galvanized iron required to be held in stock where it is the practice to fireproof decks with sheet iron.

H. A. Gerst, assistant engineer, bridge department, Great Northern, St. Paul, Minn., chairman.

Discussion

This report created considerable discussion particularly with reference to anchoring rails on bridges, the consensus of opinion opposing this practice.

Small Versus Large Gangs for Maintenance Work

The committee on this subject, J. P. Wood (Pere Marquette) chairman, made a report in which it discussed the merits of both large and small gangs and advocated gangs of five to seven men as the most economical under ordinary maintenance conditions.

R. H. Reid (N. Y. C.) favored small gangs for ordinary repair work but believed that a good-sized gang was absolutely essential for larger work and that adequate progress could not be made without it.

C. A. Lichty (C. & N. W.) called attention to the fact that emergency work required an adequate force to clean up the work quickly. Attention was also directed to the increase in overhead expenses for the small gang because of the necessity for a cook for the smaller units as well as the larger ones. Winter time work also introduced a factor in the difficulty of keeping the men properly employed but it is the duty of the man in charge to arrange the work so that there is an adequate amount to be done in the winter.

Other Business

On Tuesday evening George F. Porter, engineer of construction of the St. Lawrence Bridge Company, Montreal, gave an illustrated talk on the erection of the Quebec bridge, accompanied by slides and moving pictures.

R. H. Aishton, regional director, Northwestern region, United States Railroad Administration, made an address on Wednesday morning. He paid tribute to the loyal support of bridge and building men in the present time of stress and commended the idea of a war council which characterized the convention. He said that the problem confronting all railway men is to do more than they have ever done before while they have less to do with. He emphasized particularly the importance of watching the shipment of company materials in order that no car may be used unnecessarily, for every car thus used is depriving our military forces of the supplies which it would carry.

W. H. Finley, president of the Chicago & North Western, commended the association at the Wednesday afternoon session for its work in advancing the practical phases of railroading and in bringing together practical and theoretical knowledge of bridge construction.

On Wednesday evening the annual dinner of the Association was held at the Sherman hotel. Moving pictures of levee and flood protection work on the Mississippi river were shown, followed by slides of convention groups at previous meetings. Following adjournment on Thursday afternoon the members visited the plant of the Universal Portland Cement Company at Buffington, Ind.

At the closing session on Wednesday the following officers were selected for next year: President, L. Jutton, Chicago & North Western, Chicago; first vice-president, Fred Weise, Chicago, Milwaukee & St. Paul, Chicago; second vice-president, W. F. Strouse, Baltimore & Ohio, Baltimore; third vice-president, C. R. Knowles, Illinois Central, Chicago; fourth vice-president, Arthur Ridgway, Denver & Rio Grande, Denver, Colo.; secretary-treasurer, C. A. Lichty, Chicago & North Western, Chicago; new members of the executive committee are E. T. Howson, *Railway Age*, Chicago, and C. W. Wright, Long Island Railroad, Jamaica, N. Y.

Cleveland was selected as the location for the next meeting.

The Supply Exhibit

The Bridge and Building Supply Men's Association presented an exhibit of devices used in the bridge, building and water service departments in a room adjoining the convention hall, the exhibits consisting principally of models, samples and literature covering these products and devices.

The officers who have been in charge of this Association for the past year are as follows: President, L. D. Mitchell, Detroit Graphite Company, Chicago; vice-president, P. C. Jacobs, H. W. Johns-Manville Company, Chicago; treasurer, Tom Lehon, The Lehon Company, Chicago; secretary, C. E. Ward, U. S. Wind Engine & Pump Company, Batavia, Ill.; members executive committee, W. H. Pratt, Heath & Milligan Manufacturing Company, Chicago; M. J. Trees, Chicago Bridge & Iron Works, Chicago; C. F. Massey, C. F. Massey Company, Chicago; C. L. Cockerell, Philip Carey Company; E. T. Howson, *Railway Age*, Chicago; and E. J. Caldwell, Barrett Company, New York.

The following is a list of companies exhibiting and their representatives:

American Hoist & Derrick Co., St. Paul, Minn. Represented by F. J. Johnson and W. O. Washburn.

American Valve & Meter Co., Cincinnati, Ohio. Represented by J. T. McGarry and Dan J. Higgins.

American Tar Products Co., Chicago. Represented by P. L. Griffiths, F. H. Fields and F. E. Walter.

Barrett Company, The, New York. Represented by E. J. Caldwell, G. R. McVay, A. J. Ross, F. W. Freeman and K. C. Barth.

Bird & Son, Inc., East Walpole, Mass. Represented by M. L. Caton and H. A. Inwood.

Carey Co., Philip, Cincinnati, Ohio. Represented by C. L. Cockerell and E. L. Schenly.

Chicago Bridge & Iron Works, Chicago. Represented by M. J. Trees, H. C. Brown, C. M. Ladd and C. H. Scheman.

Chicago Pneumatic Tool Co., Chicago. Represented by Ed Alpin and F. F. De Garmo.

Detroit Graphite Co., Detroit, Mich. Represented by J. J. Hogan, L. D. Mitchell and W. D. Waugh.

Dickinson Co., Paul, Chicago. Represented by A. J. Filkins.

Dixon Crucible Co., Joseph, Jersey City, N. J. Represented by H. A. Nealley, J. E. Simpson and Neal Cameron.

Duff Manufacturing Co., The, Chicago. Represented by C. N. Thulin, and E. A. Johnson.

Fairbanks, Morse & Co., Chicago. Represented by E. C. Golladay, F. M. Condit, L. H. Mathews, A. A. Taylor and C. D. Skelton.

International Filter Co., Chicago. Represented by M. P. Robinson.

Kelly-Derby Co., Chicago. Represented by C. W. Kelly, W. B. Holcomb, G. W. Harnbrook and O. K. Fisher.

Johns-Manville Co., H. W., Chicago. Represented by P. C. Jacobs, D. L. Jennings, W. H. Lawrence, C. E. Murphy, W. D. Otter, J H. Trent, E. H. Willard and J. C. Younglove.

Lehon Co., The, Chicago. Represented by Tom Lehon and D. B. Wright.

Massey Co., C. F., Chicago. Represented by C. F. Massey, Paul Kircher, R. G. Fliel, J. E. Moody and E. C. Alexander.

Mudge & Company, Chicago. Represented by Burton W. Mudge and Herbert Deeming.

Nichols & Bro., Geo. P., Chicago. Represented by Geo. L. Nichols.

Patent Vulcanite Roofing Co., Chicago. Represented by A. J. Van Page and J. P. Woolsey.

Q. & C. Company, The, New York. Represented by B. L. Barber and J. V. Wescott.

Railway Age and Railway Maintenance Engineer, Chicago. Represented by E. T. Howson, H. H. Simmons, W. S. Lacher and L. B. Sherman.

Railway Review, Chicago. Represented by Willard A. Smith, Harold A. Smith, Chas. L. Bates and L. H. Lozier.

Snow Construction Co., T. W., Chicago. Represented by T. W. Snow and R. E. Gurley.

Standard Asphalt & Refining Co., Chicago. Represented by R. H. Trumbull.

Texas Company, The, Houston, Texas. Represented by J. J. Flinn, W. L. Gibbs and F. E. Sheehan.

U. S. Graphite Co., Saginaw, Mich. Represented by James G. Draught and H. E. Borland.

Volkhardt Company, Inc., New York and Chicago, represented by Wm. Volkhardt, Chas. Cogswell and Willis Squires.

Railroad Subscriptions $109,000,000

THE RAILROAD EMPLOYEES the United States topped the $100,000,000 mark in the Fourth Liberty Loan before the end of last week. They are now pushing their total of subscriptions still higher and the thousands of Liberty Loan committees are leaving nothing undone to reach the 100 per cent subscribers' goal before the end of the campaign.

On Tuesday of this week Director General McAdoo addressed to the regional directors the following telegram:

"I wish you would say to the railroadmen in your region, officers and employees alike, how earnestly I hope that they will subscribe to the limit of their ability to the Fourth Liberty Loan. Lending their money to Uncle Sam is the finest use they can make of it, not only because it is a safe investment for themselves, but it will help their country win the war. The fact that the Kaiser is already making offers of peace should make us more eager to put this Loan over and keep our fighting pressure at the maximum until we actually get peace. Now is the time for every man in the fighting army in Europe and in the industrial and financial army at home to go the limit to make the great victories our soldiers have already won absolutely complete and final. I hope that when the returns come in next Saturday it will be shown that the railroadmen in your region were one hundred per cent. I hope that no railroadman will fail to do his full part."

Several railroads have already reached 100 per cent subscribers. The Delaware, Lackawanna & Western was able to announce early in the week that every one of its 22,162 employees had subscribed. A big sign hanging over the concourse of its Hoboken, N. J., terminal put up last week started with a percentage of 99.3. This soon became 99.4, then 99.6, then 99.9 and finally 100; whereupon in big letters it was announced that 22,162 employees had subscribed over $2,000,000 for "Unconditional Surrender."

Regional Totals

At the close of business October 11, railroad employees of the nation had subscribed $109,638,100 to the Fourth Liberty Loan. The details follow:

	Number subscribers	Per-centage	Amount subscriptions	Amount per employee
Southwestern Region	152,558	93	$15,186,300	100
Northwestern Region	209,667	80.42	21,626,050	103.15
Pocahontas Region	31,109	.....	2,419,050	...
Allegheny Region	194,136	63.21	14,429,700	74.34
Eastern Region	324,200	62	27,286,300	84
Central Western Region..		72	21,371,450	91
Southern Region		.....	7,319,250	...
			$109,638,100	

The 43 railroads under the jurisdiction of A. H. Smith, regional director Eastern Territory, which number a total of 533,784 employees, have since reported that 389,512 individuals, or 70.34 per cent of all, already have subscribed to the Fourth Liberty Loan. The aggregate of all subscriptions is $32,593,000, or an average of $91.38.

Reports to the Eastern Regional Director up to Wednesday night showed 21 of the 43 roads in the Eastern region as having over 90 per cent of all employees subscribed. Two railroads—the Lackawanna and the Lehigh & Hudson—are 100 per cent subscribed, and are now engaged in a thorough second canvass to get second subscriptions.

A particularly large proportion of office employees are subscribers, this department exceeding that of the train service or any other department.

The average amount per subscription is running higher than for the Third loan. In this the Grand Rapids & Indiana leads the Eastern region, with $136 per subscriber average; the Lehigh & Hudson is second, with $131 and the Central Indiana third, with $120.

Subscriptions by some of the big roads in this region are as follows: (the figures are as of October 15.)

Road	Amount subscribed	Average subscription	Per cent of employees subscribing
Boston & Maine.....	$1,231,450	55	70
Baltimore & Ohio West.....	1,047,900	76	46
C. C. C. & St. Louis.....	1,767,900	83	78
Delaware, Lackawanna & Western...	2,056,050	93	100
Erie	2,354,850	77	98
Lehigh Valley	1,594,500	79	98
New Haven	1,150,400	66	36
New York Central.....	5,384,300	89	78
Penn Lines West.....	6,250,900	89	88

Keen Regional Rivalry in West

The Liberty Loan campaign in the Northwestern and Central Western regions has resolved itself into a race between the two railroad operating districts. Both regions expect to secure bond subscriptions from every employee and officer on their payrolls before the conclusion of the campaign and both hope to achieve this end first. At 7 a. m. October 14 the total subscriptions reported by Central Western railroads amounted to $23,632,800, or a little more than a million in excess of the total for the Northwestern region, which was $22,484,000. The Northwestern roads, however, reported that 86.19 per cent of their officers and employees had subscribed, as compared with 78 per cent in the Central Western region. The Northwestern region likewise led in the average subscription per subscriber, which was $103.09 as compared with $93 in the other region. The two regions were practically even as regards the number of 100 per cent roads, the Northwestern reporting nine and the Central Western reporting eight. The largest road in this class in the Northwestern region was the Chicago, St. Paul, Minneapolis & Omaha, which reported that every one of its 8,861 employees had subscribed. The largest line in the Central Western district in the 100 per cent class was the Chicago, Rock Island & Pacific with 26,253 employees and officers listed as bondholders. The Chicago & North Western reported the largest total of subscriptions in either region, with $4,516,350. The largest total in the Central Western region was reported by the Southern Pacific, with $4,028,300.

The Southwestern region reported total subscriptions amounting to $16,229,300 by 95 per cent of the employees in the territory for the period ended on midnight October 13. The average subscription reported per employee was $103. The roads under the jurisdiction of A. Robertson, federal manager, led in the total amount subscribed, with $5,341,550, and in the average amount subscribed, with $141. All of the 15,161 employees of the Rock Island Lines in the region have taken bonds, thereby equalling the record of the employees of the Rock Island in the Central Western region. The regional officers and the Southwestern Tariff Bureau, at St. Louis, also report records of 100 per cent.

Corporation Subscriptions

The railroad corporations are also subscribing heavily for the Fourth Liberty Loan. The Southern Pacific Company has taken $5,000,000; the New York Central $2,500,000, the New Haven $1,000,000, the Rock Island $1,000,000, etc.

The director general last week addressed the following communication to the presidents of all the Class I roads:

"I hope the railroad corporations of the country generally

may feel justified in subscribing as liberally as practicable to the Fourth Liberty Loan, and may be able to provide the necessary funds for this purpose otherwise than through the utilization of any portion of their standard return for the current year, all of which will be needed, so far as most of the railroads of the country are concerned, to provide for interest, dividends, much needed improvements, betterments and equipments. I can see no reason why railroad companies should not in anticipation of income to which they may be entitled from investments or otherwise in the ensuing year, subscribe now to Liberty Bonds through the banks, which, I am sure will, if desired, gladly grant them temporary loans in anticipation of their receipts coming in during the next year. Let me express my cordial appreciation of the excellent support which the railroad companies gave to the First, Second and Third Liberty Bonds issues, and I trust that they will now do their utmost in every way to insure the success of our Fourth Liberty Loan."

The subscriptions by the corporations include among others the following:

Southern Pacific	$5,000,000
New York Central (including $500,000 for Western Transit Company)	2,500,000
Chicago, Rock Island & Pacific	1,000,000
New York, New Haven & Hartford	1,000,000
Pennsylvania	5,000,000
Atchison, Topeka & Santa Fe	5,000,000
Union Pacific	2,000,000

The Baldwin Locomotive Works, which first subscribed $1,000,000, has since increased that subscription to $2,500,000, of which a considerable proportion is apportioned to the Standard Steel Works Company.

The Work of the Fuel Supervisor

By F. P. Roesch
Regional Supervisor, Northwestern Region

IT SEEMS HARD for some people to understand exactly what the United States Fuel Administration is after. They seem to be laboring under the impression that we are trying to save money when we are saving coal. We are not thinking about money; we are thinking about coal and coal only. Last year the railroads burned about 166,000,000 tons of coal. We are now threatened with a shortage of 75,000,000 tons of coal; as a matter of fact the supply on the docks at the head of the lakes is 2,000,000 tons short today. Just get this point—we are now short almost half of the total fuel consumed last year by the railroads. Just think what might happen if, on account of this shortage, we closed down practically half of the railroads in the United States. That is the reason that we are talking about saving coal—that and nothing else.

In former times if a railroad saw a possibility of saving $2 worth of coal at an expenditure of $1.90, they figured the margin of profit was a little bit too close. Now what we want to impress on everybody, from the man at the bottom to the man at the top is that all we want is to save every pound of coal in every possible manner. We realize that we cannot make any radical changes in our equipment or in our methods of operation at the present time. We must do the best we can with what we have at hand. We would like to put on lots of refinements, but we are just as short of men as we are of coal, and just as short of material as we are of men.

Without the aid of fuel we cannot take munitions and supplies from their point of origin and deliver them to the boys in France and unless we do keep them supplied we stand a mighty slim chance of winning the war. That is why we want to impress on you the necessity of saving fuel. Eighty-seven per cent of all fuel burned on railroads is burned in the locomotives. The greater part of that passes through the hands of the firemen, so naturally we look to the firemen to effect the greater saving. Some firemen can take the same engine and same train over the same division on two or three tons of coal less than the average fireman. Other men burn from two to three tons more than the average fireman. Now those are the things we want to correct. The firemen that are shoveling more than the other fellow, are not shoveling the coal for fun, the only reason is because they don't know any better and have not been taught any better. It isn't their fault; it is our fault. After the fireman is shown how and doesn't do the business, then we have some excuse for criticizing him; but at the present time we have absolutely no excuse for blaming a fireman when he doesn't know any better.

Go into any machine shop and you will see an apprentice instructor standing by the apprentice showing him how to cut a thread on a 3/8 in. bolt, worth probably 10 cents a thousand. That instruction is carried on for four years in order to make a skilled mechanic out of the boy. How do we make firemen? We go out and catch some likely looking fellow and lead him to a doctor. If after a careful examination it is found this boy has two arms, two legs and can see and hear, he is put on an engine to get him engine broke. After he is engine broke he is put on the deck and shown $40 or $50 worth of coal and told "That is a scoop and here is the hole. Hop to it." He is told that when the gage shoots around to 200 he is doing a good job. All we ask him to do is to keep up steam. We don't care if it takes 100 lb. or 2,000 lb. of coal, it is steam we are after and that is all. We hand this boy fireman $50 worth of stuff without any instructions and then blame him because he shovels more coal than he should. The only reason we have never put on instructors for the firemen and engineers was because we couldn't see or point out definitely where the loss came in. If the machinist apprentice spoiled a 3/8-in. bolt it was there to show for itself, but if the fireman put in two tons more of coal than necessary there wasn't even any smoke to show for it, and our records were so inaccurate that we had absolutely no way of proving whether they were doing right or doing wrong.

Speaking about little things, you can go through your roundhouse and see steam leaks which would only take a minute to tighten up. Go through your rip tracks, and you see leaky air hose, or water going to waste, and you let it go. The sum of all those things amounts to a whole lot. With steam at 200 lb. pressure, a hole you could stop up with a match will waste a little over two tons of coal a month. In making up trains the train men don't always tighten up the air leaks. They will say that isn't their job and leave it for the other fellow to do. Shutting box car doors is neglected for the same reason. You think an open box car door doesn't make much difference when it comes to the coal pile. Wind blowing into a box car through an open door offers resistance to the movement of that train, so when you find box car doors open close them even though the car inspector did forget it.

In going through the various roundhouses, etc., you will notice steam lines not covered. We are following that closely for the reason that you can get such big returns for a small investment. Every 2 3/4 sq. ft., of exposed steam pipe carrying a pressure of about 80 lb. will lose through radiation one ton of coal a year. Practically all railroads have most of the wrapper sheets on the locomotives exposed. The radiation losses due to exposed wrapper or side sheets are equal to one ton for every 2.12 sq. ft. If you only have 100 locomotives on a railroad fired up half the time you have a loss of 700 tons of coal a year. I give you these examples to illustrate the losses due to little things; things we can all correct. All we ask you to do is to get the right view point. Uncle Sam is asking you to save a lump of coal wherever you can. You see fuel losses everywhere and wonder why the other fellow doesn't get in the game. Get in the game yourself. Give us your co-operation to help the bunch over yonder to win the war.

General News Department

The ten-million-bushel grain elevator recently built by the Chicago & North Western in Chicago was the subject of a paper by W. H. Finley, president of that company, before the Western Society of Engineers, Chicago, on Monday evening, October 14.

The Railway Fire Protection Association's annual meeting, which was scheduled to be held at Chicago this week, has been postponed. This action was taken on account of the epidemic of Spanish influenza and also because of the urgency of the Fourth Liberty Loan campaign.

The Wisconsin & Michigan, a 98-mile road located in northern Michigan, has decided to discontinue operation and is now trying to locate its freight cars now scattered all over the country; 26 box, nine refrigerator, 12 gondola and 214 flat cars. The Railroad Administration is assisting the company in the search.

The Short Line railroads have come to an understanding with the Railroad Administration. An informal agreement has practically been reached, between the representatives of the Short Lines and Mr. McAdoo, on a form of contract by which the road would be taken under government control, without compensation. The proposed contract is, however, to be discussed by Mr. McAdoo with President Wilson before final government approval.

New York Central night trains making long-distance passenger runs, and beginning their trips on Saturday evening, October 26, will be started one hour behind time, with certain exceptions. For example the Twentieth Century Limited Express, due to leave New York for Chicago at 2:45 p. m., will start at 3:45 p. m. This arrangement is adopted so as to avoid the necessity of holding the trains an hour at some way station on account of the setting back of clocks at 2 a. m. on Sunday. Regional Director A. H. Smith has recommended this course of action to all of the roads in Eastern territory. The New York Central's exceptions to the rule are in such cases, for example, as that of Train 11, the Southwestern Limited, leaving New York at 4:50 p. m., and Train 23, the Western express, leaving at 6 p. m., which make a number of stops. These will leave on time. Train 11 will be held at Rochester (12:30 a. m.) for the clock to catch up with it, and Train 23 at Utica (1:20 a. m.).

The Consolidated ticket office of the Railroad Administration at Milwaukee, Wis., was opened on October 10. The Chicago, Milwaukee & St. Paul, the Chicago & North Western and the Minneapolis, St. Paul & Sault Ste. Marie have quarters in this office. The Railroad Administration expects to open the union ticket office in Chicago, on October 28. This office will occupy practically the whole ground floor of the Insurance Exchange building on the corner of Wells street and Jackson boulevard. At New York City it was announced on Monday of this week that all of the new consolidated ticket offices had been opened. They are at 64 Broadway, 57 Chambers street (280 Broadway), 31 West 32d street, near Broadway, and 114 West 42d street, between Broadway and Sixth avenue. All four have the same telephone number, 6700 Bryant. Each office sells all forms of railroad and coastwise steamship tickets to all points, over all lines, and will give advice regarding freight shipments.

Western Railway Club Meeting

The Western Railway Club will hold its monthly meeting at the Hotel Sherman, Chicago, on Monday evening, October 21. Edmund Burke, of Crane & Co., will present a paper on The Efficient Use of Power Plants; Locating and Stopping Leaks and Waste. A dinner will be served in the Italian room at 6:30 p. m., and the meeting will be held in the Louis XVI room at eight o'clock.

No Labor Slackers Here

Although many industries seem to have considerable difficulty in combatting a marked spirit of laxness among their employees, the American Brake Company, St. Louis, believes that it has no labor slackers on its payroll. For the purpose of impressing both officers and employees with the duty to perform an honest day's work, which each owes to his country and to the armed forces of the nation, a voluntary pledge was prepared, which was signed by every man and woman in the service of the company, high and low. The pledge reads as follows:

We, the undersigned employees of the American Brake Company, do hereby solemnly pledge:

To keep *constantly* in our minds, during the hours of work as well as during those of rest, that the greatest and most terrible of wars is being fought by our own sons and brothers, to safeguard the honor and liberty of all Americans and of the entire civilized world. We realize the vital importance of whole-hearted and constant co-operation between us and the fighting men, without which no victory and consequently no peace can ever be won; and, therefore,

We vow to stand by them at all times and until the very end, and if they do not relax their fighting we will never relax our work.

We further solemnly declare that we will not indulge in unreasonable, useless waste of time, money or food, or anything beyond normal and necessary recreation.

WE SHALL LIVE AND WORK AS EARNESTLY AND AS FULL OF PURPOSE HERE AS OUR BOYS FIGHT AND DIE OVER THERE.

Classification of Small Ties

At a conference between a number of tie producers and L. S. Carroll and F. A. Bushnell, of the regional purchasing committee for the Northwestern region, which was held in Chicago recently, the question of the disposition of ties which do not comply with present specifications, but which formerly had been accepted by the individual roads was considered. For instance, it was stated that the new specifications require the making of ties from timber not less than 9 in. to 9½ in. in diameter at the small end, whereas formerly ties were accepted that had been made from timber as small as 8 and 8½ in. at the small end. The regional purchasing agents have advised that the individual buyers of the various roads have authority to purchase these rejected ties at a price considerably in advance of that for culls, which is 34 cents, but not within 10 cents of the lowest price authorized for ties complying with the specifications. It was stated that the price to be paid is a matter for negotiation between the individual roads and the tie producers.

Engineer Material Shipped Abroad

The following list of materials shipped from this country up to August 31 by the corps of engineers for the use of our armies abroad has been given out by the acting secretary of war, Benedict Crowell:

Rails and accessories—standard gage track	213,000 tons
Rails and accessories—narrow gage track	64,000 "
Structural steel	45,000 "
Corrugated iron	7,000 "
Barbed wire	16,000 "
Lumber, including ties, stringers and piles	57,000 "
Building materials:	
Wall board	2,000 "
Expanded metal	5,000 "
Nails	10,000 "
Camouflage materials:	
Wire netting	2,000,000 sq. yd.
Paint	1,200 tons
Burlap	3,000,000 sq. yd.
Fish netting	1,300,000 " "
Steel warehouse sheds (100) covering	2,000,000 sq. ft.

Pontoon equipment—Pontoon equipment for three divisions has been shipped overseas, and the equipment for 36 additional divisions is now being freighted.

In addition, large quantities of engineering materials have been bought in England, France and Switzerland, including 8,015 tons of machinery, 5,117 tons of materials for locomotives and cars, and 114,628 tons of materials for track and ties.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST, 1918 (CONTINUED)

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses						Operating ratio.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
					Maintenance of										
		Freight.	Passenger.	Total (inc. misc.)	Way and structures.	Equipment.	Traffic.	Transportation.	General.	Total.					
Galveston, Harrisburgh & San Antonio..	1,382	$1,262,337	$639,540	$2,062,184	$202,590	$225,669	$21,233	$644,537	$52,294	$1,150,697	55.79	$911,488	$57,147	$853,882	$185,881
Galveston Wharf	13	.....	.....	51,705	1,043	2,624	282	32,003	745	68,613	132.70	—16,908	11,800	—28,708	—62,687
Georgia	328	351,232	185,832	569,709	39,433	58,869	6,856	205,646	15,303	326,296	57.27	243,412	5,954	237,448	122,959
Georgia, Southern & Florida	402	187,605	95,582	308,201	50,235	106,655	3,967	114,905	8,409	285,374	92.59	22,626	13,168	9,378	—12,152
Grand Rapids & Indiana	569	438,196	243,176	744,922	72,832	168,201	9,332	276,202	21,009	552,583	74.17	192,339	22,982	169,356	—41,173
Grand Trunk Western Lines	992	1,256,527	256,442	1,649,552	240,439	771,345	16,921	868,575	27,067	1,932,013	117.12	—282,461	44,145	—326,606	—509,474
Great Northern	8,260	6,836,623	1,565,341	9,087,418	1,405,588	1,867,611	57,868	3,398,454	138,082	6,935,830	76.32	2,151,588	523,230	1,627,620	—1,003,024
Gulf & Ship Island	307	170,207	71,860	258,668	44,144	71,225	3,223	75,932	8,692	203,357	78.61	55,311	10,623	44,688	—49,427
Gulf, Colorado & Santa Fe	1,937	1,131,584	436,323	1,647,095	229,032	436,631	15,249	581,340	44,090	1,295,499	78.65	351,595	69,646	281,458	—18,767
Gulf, Mobile & Northern	402	167,228	50,107	228,292	40,884	54,990	4,143	90,120	8,522	198,658	87.01	29,634	11,224	18,410	—61,916
Hocking Valley	349	1,390,194	121,145	1,606,675	139,447	324,683	5,787	463,062	20,289	953,176	59.32	653,499	54,025	599,475	234,163
Houston, East & West Texas	190	140,905	53,210	203,726	24,323	16,087	1,147	63,386	2,943	107,888	52.95	95,839	6,432	89,400	28,473
Houston & Texas Central	948	677,734	200,231	944,616	102,121	83,716	6,766	219,159	15,477	427,015	45.21	517,601	35,777	481,670	269,883
Illinois Central	4,782	7,432,970	2,073,505	10,246,024	1,547,666	2,458,588	55,617	3,522,064	202,718	7,849,702	76.61	2,397,122	498,686	1,897,854	66,395
Indiana Harbor Belt	116	.....	.....	527,282	123,475	77,482	1,744	286,640	12,607	501,949	95.20	25,333	10,696	14,638	—103,761
International & Great Northern	1,159	787,686	317,493	1,172,264	171,467	305,504	7,563	445,042	35,468	957,774	81.70	214,490	30,000	184,440	—119,799
Kanawha & Michigan	176	501,563	119,500	649,354	88,136	131,907	2,337	177,298	11,307	410,985	63.29	238,369	22,099	216,270	96,000
Kansas City, Mexico & Orient	272	92,608	19,475	118,828	17,174	64,679	3,008	55,268	7,612	147,742	124.33	—28,914	6,250	—35,164	—36,908
Kansas City, Mex. & Orient of Tex	465	75,059	14,316	94,626	38,288	39,183	2,517	81,680	7,782	169,450	179.08	—74,824	5,000	—79,878	—70,691
Kansas City Southern	774	895,834	228,131	1,226,967	168,459	279,354	16,622	500,426	31,186	995,017	81.09	231,950	56,986	174,576	—192,852
Lake Erie & Western	900	839,014	64,335	942,297	117,176	267,586	10,522	356,192	20,899	772,161	81.94	170,136	30,000	140,135	—2,400
Lehigh & Hudson River	96	222,001	5,405	237,030	30,327	76,265	1,176	88,132	4,102	200,002	84.38	37,028	6,000	31,028	—48,846
Lehigh & New England	296	574,124	1,440	607,294	44,152	94,152	2,726	137,064	8,735	286,826	47.23	320,468	8,610	311,858	172,437
Lehigh Valley	1,442	5,539,165	962,465	7,051,975	770,464	1,930,018	52,245	2,449,962	217,894	5,794,145	82.16	1,757,831	161,471	1,596,301	510,237
Long Island	398	586,791	1,776,052	2,628,653	239,637	330,486	8,786	848,196	36,740	1,479,150	56.27	1,149,502	89,871	1,058,842	184,790
Los Angeles & Salt Lake	1,168	934,219	278,496	1,309,734	127,335	372,949	16,220	392,649	25,244	963,900	73.59	345,834	62,565	283,270	—78,513
Louisiana & Arkansas	302	102,168	38,091	145,428	38,495	54,486	2,858	62,082	5,011	162,932	112.04	—17,504	10,355	—27,871	—75,120
Louisiana Ry. & Nav. Co	356	210,208	84,376	317,032	62,026	56,407	3,598	107,383	8,474	237,888	75.03	79,144	14,000	65,143	12,797
Louisiana Western	207	257,597	137,396	420,858	28,526	39,307	5,322	91,403	8,709	174,572	41.48	246,286	14,676	231,467	75,971
Louisville & Nashville	4,996	7,603,411	2,638,509	10,873,686	1,203,033	2,091,118	99,333	3,224,775	156,539	6,801,069	62.54	4,072,617	236,676	3,834,785	1,967,487
Louisville, Henderson & St. Louis	199	188,000	75,000	270,708	32,619	42,838	5,233	86,919	5,117	173,112	63.94	97,596	3,767	93,803	25,132
Maine Central	1,216	1,044,855	548,692	1,728,257	239,866	298,128	11,810	770,650	32,768	1,362,177	78.81	366,080	67,460	298,620	—5,424
Maryland, Delaware & Virginia Ry. Co	82	72,565	74,043	149,768	6,158	36,327	1,226	70,827	1,573	116,112	77.52	33,656	1,892	31,764	—2,874
Michigan Central	1,861	4,622,961	1,936,264	7,111,090	657,738	1,858,000	55,218	2,438,321	91,642	5,170,117	72.70	1,940,973	168,000	1,772,944	505,192
Midland Valley	387	222,768	70,659	302,848	60,295	91,690	2,226	110,596	9,135	273,944	90.45	28,904	7,241	21,641	—83,585
Mineral Range	100	107,231	2,413	112,390	15,387	54,256	305	78,204	811	148,962	132.30	—36,573	3,300	—39,873	—52,586
Minneapolis & St. Louis	1,646	880,197	192,237	1,127,144	187,860	506,858	10,349	540,166	23,125	1,268,445	112.53	—141,300	51,482	—192,840	—418,893
Min. & International	195	42,078	24,985	71,302	20,615	24,301	381	36,918	2,971	85,186	119.47	—13,884	3,565	—17,463	—24,883
Minn., St. Paul & Sault Ste. Marie	4,243	2,622,001	662,847	3,529,865	473,618	630,499	19,538	1,206,840	58,453	2,402,288	68.06	1,127,577	178,559	949,017	46,974
Missouri & North Arkansas	365	95,782	49,161	154,953	34,935	26,933	1,804	51,494	5,679	120,846	77.98	34,107	5,750	28,278	—6,521
Missouri, Okla. & Gulf	332	125,027	24,922	158,688	36,061	51,364	1,720	74,431	11,806	175,548	110.62	—16,861	9,000	—26,191	—58,484
Missouri Pacific	7,301	5,903,372	2,055,418	8,507,547	1,203,444	1,234,377	77,447	3,411,470	146,490	6,093,534	71.62	2,414,013	260,004	2,152,850	132,999
Mobile & Ohio	1,076	1,199,138	219,358	1,494,896	175,824	414,568	23,364	595,048	38,169	1,247,198	83.43	247,697	43,376	204,307	3,242
Monongahela	108	283,059	21,562	313,659	58,998	30,079	968	89,254	4,949	184,248	58.74	129,411	3,750	125,661	63,046
Monongahela Connecting	5	.....	.....	243,631	25,062	38,443	464	107,948	5,672	177,590	72.89	66,041	1,773	64,267	78,238
Morgan's La. & Tex. R. R. & S. S. Co	400	532,236	200,411	802,349	69,310	75,764	6,407	225,246	13,996	392,015	48.85	410,335	33,627	376,425	197,619
Nashville, Chattanooga & St. Louis	1,237	1,514,691	616,135	2,264,739	273,713	449,303	30,143	821,975	38,353	1,624,017	71.71	640,722	33,334	607,258	328,546
Nevada Northern	168	267,656	16,248	290,685	26,492	24,608	973	68,241	5,045	125,381	43.13	165,303	19,612	145,691	33,790
Newburgh & South Shore	7	.....	.....	167,214	20,078	23,823	.....	57,268	2,745	103,914	62.14	63,300	9,748	54,152	57,163
New Orleans & North Eastern	203	489,292	136,966	697,620	67,919	201,338	8,600	252,272	10,393	543,106	77.85	154,514	26,540	427,913	79,932
New Orleans Great Northern	284	165,523	47,372	219,250	25,975	29,079	1,054	67,587	9,093	133,099	60.70	86,151	8,142	78,008	—1,275
New Orleans, Texas & Mexico	191	94,684	46,594	145,890	35,747	57,315	2,731	50,349	5,071	151,619	103.92	—5,729	3,020	—8,749	—32,336
New York Central	6,079	19,597,948	8,133,969	31,102,238	2,941,464	8,077,631	211,400	10,605,366	553,648	22,702,342	72.99	8,399,896	1,166,104	7,232,595	1,616,190
New York, Chicago & St. Louis	572	1,886,172	396,317	2,341,173	218,309	376,737	21,904	745,707	45,922	1,412,528	60.32	928,645	.....	928,638	535,433
New York, New Haven & Hartford	2,007	5,657,914	4,344,106	11,113,939	1,056,802	1,760,312	43,368	4,174,942	262,272	7,441,922	66.96	3,672,017	283,000	3,388,764	1,327,602
New York, Ontario & Western	567	628,537	510,915	1,303,077	156,140	257,249	11,056	468,862	18,737	912,042	69.99	391,035	20,598	370,436	—86,227
New York, Philadelphia & Norfolk	121	581,467	138,299	775,211	49,790	155,693	7,691	302,416	9,420	540,830	69.76	234,380	17,308	217,002	66,085
New York, Susquehanna & Western	135	449,937	62,488	546,922	35,690	146,988	2,214	202,235	7,416	394,543	72.14	152,370	14,917	137,462	74,984
Norfolk & Western	2,078	7,186,477	1,123,973	8,610,301	859,224	1,800,010	33,194	2,395,989	90,935	5,191,436	60.29	3,418,866	200,000	3,218,602	1,088,331
Norfolk Southern	907	280,270	173,341	488,381	97,431	169,862	6,590	209,886	17,105	501,032	102.59	—12,651	15,800	—28,462	—171,931
Northern Pacific	6,555	7,072,364	1,851,060	9,804,525	1,196,047	1,531,384	51,028	3,021,677	141,735	5,998,479	61.18	3,806,046	588,553	3,216,690	650,232
Northwestern Pacific	507	374,279	254,295	682,398	61,689	87,370	5,014	213,802	9,530	379,052	55.54	303,346	22,129	281,516	62,989
Oregon Short Line	2,234	2,496,832	601,699	3,306,088	385,630	504,553	19,307	832,262	78,720	1,876,434	56.76	1,429,655	157,754	1,271,563	145,998
Oregon-Washington R. R. & Nav. Co	2,065	1,802,653	671,928	2,726,068	263,581	380,352	22,394	881,637	80,927	1,666,064	61.11	1,060,004	123,466	936,427	521,274
Panhandle & Santa Fe	772	346,720	161,459	530,198	112,412	140,898	3,994	182,696	12,354	449,270	84.73	80,928	18,638	62,296	—217,258
Pennsylvania Company	1,754	7,180,780	1,794,083	9,832,406	1,528,123	2,548,853	88,422	3,659,535	152,119	8,029,949	81.67	1,802,507	295,900	1,506,607	—642,267
Pennsylvania Railroad	5,342	24,296,844	9,755,572	36,975,640	4,177,429	9,267,765	175,927	13,675,602	613,310	28,375,516	76.74	8,600,124	885,187	7,713,354	1,147,891
Peoria & Pekin Union	19	19,034	6,218	102,472	16,641	22,955	41	68,631	4,246	112,514	109.70	—10,042	9,500	—19,543	—40,630
Pere Marquette	2,233	1,962,336	548,365	2,756,665	330,461	1,139,975	19,969	1,061,093	60,637	2,618,306	94.98	138,360	55,156	82,920	—565,686

A New Office

Frederick D. Underwood, president of the Erie Railroad, has been appointed icebreaker of the Port of New York. In making this appointment the War Department has co-operated with the United States Fuel Administration and the New York State Fuel Administration to clear the way for coal should the bay and river become ice-bound.

Mr. Underwood is a veteran icebreaker. When in charge of the Soo Line he devoted much of his time in winter to keeping the Straits of Mackinac open for car ferries. The Federal government, through the shipping control committee, is to see to the furnishing of vessels suitable for breaking ice in New York waters.

Daylight Saving

A bill to continue indefinitely the present arrangement for daylight saving, instead of turning the clock hands back on October 27, as the law now provides, has been introduced in Congress by Senator Calder, of New York, and was favorably reported by the Senate Committee on Interstate Commerce on October 10. Passage of the bill in the Lower House will be opposed by numerous interests. The Philadelphia Bourse has entered a protest, declaring that continuance of the present arrangement throughout the winter months will defeat the purposes for which the plan was adopted. During the late autumn and winter months when the sun rises later, there is no unused daylight in the morning. To require the performance of early morning household tasks and the starting of work in factories during a period when artificial light will be required and when the vitality of workers is low, with no commensurate saving in the afternoon, would be very unwise. This country would be at variance with Canada, which uses the plan only during the summer months.

The attorney general of New York has called attention to the disturbance which the Calder bill would make in the opening and closing of the polls in New York state on election day. When the daylight saving plan was made effective the laws of New York were amended to provide for the change up to the last Sunday in October. On that day it will be incumbent upon courts and public officers to conform to the provisions of the state law, and if the federal "daylight extension" bill is passed it will create a conflict between the state and federal time, which cannot be remedied until the Legislature meets in January.

National Association of Railway Commissioners

The thirtieth annual convention of the National Association of Railway and Utilities Commissioners will be held at the Interstate Commerce building, Washington, D. C., beginning on Tuesday, November 12, and continuing probably four or five days. The association will be welcomed to Washington by Chairman W. M. Daniels of the Interstate Commerce Commission, and Mr. McAdoo, director general of railroads, has accepted an invitation to address the convention, subject to his possible absence by reason of his public duties.

The call for the convention, issued by James B. Walker, secretary, 49 Lafayette street, New York City, calls special attention to the importance of this meeting of the association. It says in part:

"Never before have the members been confronted with so many pressing problems. The railroad business of the country is now conducted under government control, freight and passenger rates have been advanced and the effects of the changes are felt in every State, bringing to each regulating commission a series of new problems. Government control has been extended to express, telephone and telegraph companies.

"The relations of the State Commissions to the National Government, their ability to promote the success of governmental operation and their undoubted desire to co-operate to the greatest extent during the war, so as to strengthen the arm of the nation in its mighty struggle, demand most serious consideration.

"The State Commissions should begin a study of future conditions. After the war the continuation of government control or the return of railroads to private ownership no doubt will be the subject of controversy. No one will be more competent to speak upon this question than the regulating commissions. The subject probably will be considered at this convention, and therefore it would be well for the several state commissions to be prepared to give the results of government operation in their respective states.

"Reports of standing committees will be taken up, as nearly as the convenience of the convention will permit, in the order in which they appear in the list of committees given below. The Executive Committee may, for good reasons, vary the sequence of reports after the convention meets. The special war committee, appointed at the last meeting, will present a report which probably will be the most important feature of the convention. The chairman of this committee, Mr. Thelen, of California, having resigned, the chairmanship is now held by J. B. Eastman, of Massachusetts. This committee has held numerous conferences with officers of the government at Washington, and has kept in touch with the National Railroad Administration."

President Niles having resigned, Charles E. Elmquist, of Minnesota, first vice-president, has become acting president of the association. Following are the committees from which reports are expected:

Special War Committee, J. B. Eastman (Mass.), chairman.

Public Ownership and Operation, Frank Irvine (N. Y.), chairman.

Safety of Railroad Operation, C. C. McChord (I. C. C.), chairman.

Safety of Operation of Public Utility Companies, F. J. H. Kracke (N. Y.), chairman.

Railroad service, accommodations and claims, C. S. Cunningham (Mich.), chairman.

Service of Public Utility Companies, W. D. B. Ainey (Pa.), chairman.

Railroad Rates, D. N. Lewis (Iowa), chairman.

Public Utility Rates, E. F. Morgan (W. Va.), chairman.

Car Service and Demurrage, O. B. P. Jacobson (Minn.), chairman.

Express and Other Contract Carriers by Rail, R. C. Dunn (Fla.), chairman.

Statistics and Accounts of Railroad Companies, C. B. Aitchison (I. C. C.), chairman.

Statistics and Accounts of Public Utility Companies, E. J. Bean (Miss.), chairman.

Grade Crossings and Trespassing on Railroads. (Chairmanship vacant.)

Valuation Committee, W. A. Shaw (Ill.), Chairman.

Capitalization and Intercorporate Relations, W. B. Skelton (Me.), chairman.

State and Federal Legislation, L. B. Finn (Ky.), chairman.

Publication of Commissions' Decisions, J. R. Barhite (N. Y.), chairman.

Maintenance Painters' Convention

The fifteenth annual convention of the Maintenance of Way Master Painters' Association of the United States and Canada, was held at the Hotel La Salle, Chicago, on Tuesday, Wednesday and Thursday of this week. The first session was called to order by President H. E. Conrad, master painter of the Pennsylvania Railroad, on Tuesday morning, 42 members and visitors being in attendance. A large part of the program was devoted to a discussion of matters of particular concern to the maintenance painter under the prevailing conditions. A report of the proceedings including abstracts of those papers of general interest, will appear in a future issue.

Passenger Traffic Officers

The annual convention of the American Association of Passenger Traffic Officers which was to have been held at Baltimore on October 23 and 24 has been indefinitely postponed because of the prohibition against public assemblages on account of the influenza epidemic. It had been planned to hold the opening session of the convention at Washington for an address by Director General McAdoo and to hold the following sessions at Baltimore.

Traffic News

Grain in Chicago elevators on September 28, 1918, amounted to 31,794,000 bushels, as compared with 4,171,000 bushels on September 29, 1917.

A code of uniform baggage rules and regulations has been promulgated by the Railroad Administration, to be put into effect December 1. It embodies a single joint tariff for all railroads under government control. The new rules have been formulated by a special baggage committee. While they contain no radical changes they are expected to be of advantage to the traveling public by doing away with many variations in rules that have existed in various parts of the country. The railroads have been working for years toward standardized baggage rules and have attained a considerable degree of uniformity, but there were many local exceptions.

Readjustment of Freight Rates on St. Louis-East St. Louis Traffic

The application of General Order 28 as interpreted by the Terminal Railroad Association of St. Louis, and published in Supplement 23 to its freight tariff, 23-H, resulted in several inequalities in commodity rates. As a result the chairman of the St. Louis District freight traffic committee was directed to arrange for a conference with the commercial interests and a representative of the Terminal Railroad Association, with the result that a modified tariff was drafted and the Railroad Administration at Washington was asked for authority to make the changes. This action resulted in the issuance of Freight Rate Authority 968, on September 14, by the chairman of the Western freight traffic committee. This authority ordered the removal of the class rates on carload business entirely, and provided a general rate of two cents per 100 lb., with a minimum of $12 per car, on all traffic not carried in the Terminal tariffs' list of commodities. The commodity rates were also equalized substantially and the minimum reduced from $15 to $12 a car. The amended rates were published in the reissue of the Terminal tariff, 23-I., I. C. C. No. 110, and made effective September 25.

Coal Production

The output of bituminuos coal during the week ended October 5 is estimated at 12,585,000 net tons, a decrease of 3.6 per cent compared with the week preceding, but an increase of approximately 16 per cent over the corresponding week of 1917. Production of anthracite during the week is estimated at 2,052,000 net tons, the same as during the corresponding week of last year. The percentage of full time output lost on account of car shortage during the week ending September 28 was reported by bituminous operators as 5½ per cent.

Loading of bituminous coal on the railroads in the Eastern region from January 1, 1918, to October 1, shows an increase of 11.7 per cent over the record for the same period in 1917. The shipments by the different roads are reported as below:

Road	Tons	Per cent Inc. or Dec. over 1917
Baltimore & Ohio	115,985	31.0
Buffalo, Rochester & Pittsburgh	183,271	9.0
Central Indiana	2,757	70.0
Chicago, Indianapolis & Louisville	31,433	28.0
Cincinnati, Indianapolis & Western	5,094	67.0
C. C. C. & St. Louis	155,231	4.0
Detroit, Tol. & I.	8,559	1.6
Erie	24,537	1.0
Hocking Valley	107,642	11.0
Kanawha & Michigan	58,479	2.7
New York Central	188,287	2.8 D
Pennsylvania Lines West	463,706	21.0
Pere Marquette	8,633	5.0
Pittsburgh & Shawmut	43,567	3.0 D
Toledo & O. C.	87,271	18.0
Tol., St. L. & W.	13,341	...
Wabash	52,298	12.0 D
Pitts., Char. & Y.	11,938	5.0
Wheeling & Lake Erie	70,492	29.0

Commission and Court News

Interstate Commerce Commission

The commission has postponed the effective date of its order in the private car case from Octiber 15 to November 15.

The commission has issued an order authorizing railroads not under federal control to put into effect the changes in demurrage rules affecting private cars which were put into effect by the Railroad Administration on October 15. The changes are to conform to the commission's decision in the private car case.

Court News

Assaults of Intoxicated Passengers

The Missouri Supreme Court holds that the state statute of 1909, making it unlawful for any person to enter a passenger train while intoxicated, but excepting therefrom dining and private cars, is in violation of the Fourteenth Amendment to the United States Constitution, and also of the State Constitution, in that it does not operate equally and alike upon all similarly situated.—Lige v. C. B. & Q. (Mo.), 204 S. W. 508. Decided July 5, 1918.

Special Railroad Charter Upheld

In a decision rendered on September 23, Judge John S. McDonald of the Kent circuit court, Grand Rapids, Mich., held that the special charter of the Detroit, Grand Haven & Milwaukee is unassailable and the reports of the company on the amount of capital stock paid in, upon which its taxes are computed, are correct. The special charter which was granted to this company provides that the company shall pay an annual tax of one per cent on the capital stock paid in. This charter was first attacked in 1884 in what is known as the Joy case (55 Michigan 94) in which the legality of the organization of the company was upheld by the court. In 1901 the state changed its method of assessing railroads, passing the so-called ad valorem tax law. The constitutionality of this law was attacked by the railroad companies of the state in suits entered in the federal courts. The suits were finally decided in the United States supreme court in 1906 and all the railroad companies in the state except the Detroit, Grand Haven & Milwaukee, were brought under the ad valorem law. The charter of the latter company, which is perpetual, was held to constitute a binding contract. The state then began suits in its own courts with the object of annulling the charter. These suits were decided in 1909, by the state supreme court, in favor of the company, the court holding that the decisions in the former cases had settled the matter. Up to that time the state had never questioned the correctness of the amounts reported by the company as constituting its capital stock paid in. In 1910, however, it began a suit in the Kent circuit court at Grand Rapids, setting up that the reports annually filed by the company were incorrect, that the company was taxable upon the aggregate amount of its capital investment, meaning the total amount invested in the road, equipment, etc., and that it should pay taxes to the state on the correct amount for the 55 years since 1855; and for the future on that basis. The lowest amount which the state representatives claimed constituted the capital stock paid in was $7,000,000 which would mean that the company was liable for the difference between $70,000 in taxes annually and $25,-171.40, or for the 55-year period approximately $2,475,000, not including interest. In the opinion handed down by Judge McDonald on September 23, it is held that the long practical construction of the tax basis by the state officers and the company is conclusive. It is expected that the case will be appealed to the state supreme court.—Michigan vs. the Detroit, Grand Haven & Milwaukee.

Equipment and Supplies

64 Locomotives Delivered in Week Ending October 5

A total of 64 locomotives were shipped by the builders to railroads under federal control during the week ended October 5. Forty were delivered by the American Locomotive Company, 9 by the Lima Locomotive Corporation and 15 by the Baldwin Locomotive Works. Of the total, 40 were of the U. S. R. A. standard types of Mikado and switching locomotives and the others, locomotives previously ordered by individual railroads.

The detailed figures follow:

Works	Road	Number	Type
American	S. A. L.	4	USRA Mikado
	C. M. & St. P.	1	USRA Mikado
	T. & O. C.	15	USRA Mikado
	P. M. & Y.	10	USRA Mikado
	T. & O. C.	1	USRA switch
	Portland Ter.	2	Switch
	W. & A.	1	USRA switch
	Penn. W. L.	1	Santa Fe
	Virginian	1	Mallet
	L. & N.	1	USRA Mikado
	A. & W. P.	1	USRA switch
	Erie	1	USRA switch
	C. & O.	1	Mallet
		40	
Lima	Ill. Cent.	9	Mikado
Baldwin	Southern	2	Mallet
	P. & R.	1	Cons.
	Ill. Cent.	1	Mikado
	L. E. & W.	2	USRA Mikado
	A. T. & S. Fe	1	Mikado
	U. P.	1	Mikado
	Great N.	1	Mikado
	Canton	1	Switch
	P. R. R.	1	Mikado
	C. C. C. & St. L.	3	USRA Mikado
	A. C. L.	1	Mikado
		15	
	Grand Total	64	

American Locomotive Company Signs Italian Contract

Following the annual meeting of the American Locomotive Company, Tuesday, President W. A. Fletcher said that the company had just closed a contract with the Italian Government for 150 locomotives. The engines will be used on the Italian State Railways and will cost in excess of $5,000,000.

The 150 locomotives are of the consolidation type. They will have a total weight in working order of 147,000 lb., 21¼ by 27½ in. cylinders, and will be equipped with superheaters.

"Business is very good," said Mr. Fletcher, "and we are highly optimistic over the situation. At present we have orders on our books which are sufficient to carry us well into 1919."

Freight Cars

THE CARNEGIE STEEL COMPANY is inquiring for eight self-clearing hopper cars.

THE BALDWIN LOCOMOTIVE WORKS, Philadelphia, Pa., is inquiring for 25 gondola cars.

THE INLAND STEEL COMPANY, Indiana Harbor, Ind., is inquiring for seven scale car trucks.

THE BIDDLE PURCHASING COMPANY, Chicago, is inquiring for 100 standard-gage, four-wheel trucks.

THE MARK MANUFACTURING COMPANY, Chicago, is inquiring for six all-steel, 50-ton, hopper-bottom gondola cars and two all-steel, 50-ton, two-way side dump cars.

Iron and Steel

THE GREAT NORTHERN has ordered 675 tons of steel for deck and through girder spans from the Milwaukee Bridge Company.

Supply Trade News

M. M. Auerbach, assistant secretary and assistant treasurer of the National Railway Devices Company of Chicago, died at his home in that city on October 9.

H. G. Elfborg, consulting engineer and director of the Ajax Forge Company, has severed his connection with that concern. Mr. Elfborg has been connected with that company for the past 23 years.

A. E. Brown, formerly general agent of the Chicago & Alton, at Detroit, Mich., has been appointed manager of the railroad department of the Truscon Steel Company, with headquarters at Chicago.

Albert H. Noyes, secretary and treasurer of the Ayer & Lord Tie Company, Chicago, has resigned to engage in active service with the American Red Cross in France and sailed for overseas duty on September 27.

Robert M. Dixon, president of the Safety Car Heating & Lighting Company and of the Pintsch Compressing Company, died at his home in East Orange, N. J., October 16, of heart disease.

John R. Edmonds, traveling representative of the Schroeder Headlight & Generator Company, Evansville, Ind., has entered the Engineers (Ry.), U. S. Army, at Ft. Benjamin, Harrison, Ind. Mr. Edmonds is attached to an operating railway regiment which is being organized to assist in the operation of the U. S. Military Railways in France.

M. V. Bailliere, whose resignation as mechanical engineer of the New York Central lines west of Buffalo, with headquarters at Cleveland, Ohio, was announced in the *Railway Age* of August 16, has become associated with the Roberts & Schaefer Company, at Chicago, as contracting engineer of that company, succeeding **Clyde C. Ross,** who has been promoted to contracting manager. In his new position, Mr. Bailliere will be engaged in the designing, contracting and erection of locomotive coaling plants, "R and S" gravity sand plants and cinder handling plants. He is a graduate of the mechanical engineering school at Cornell University. After completing his work at Cornell he went to the Helena Power Transmission Company, at Butte, Mont., where he remained for approximately a year and a half, following which he entered the service of the New York Central as a draftsman in the engineering department at Cleveland, Ohio. Subsequently he became assistant engineer and mechanical engineer, resigning from the latter position to go to the Roberts & Schaefer Company, as mentioned above.

M. V. Bailliere

William Allis, chairman of the board of directors of the Allis-Chalmers Company, at Milwaukee, Wis., died on October 10. Mr. Allis succeeded his father as president of E. T. Allis & Company and continued in that position until the formation of the Allis-Chalmers Company, at which time he became chairman of the board of directors.

Lauren J. Drake, president of the Standard Oil Company, of Indiana, died at his home in Chicago on October 10. Mr. Drake was born at Buffalo, N. Y., on January 29, 1846. For years he was a director of the Standard Oil Company of

New Jersey, vice president and director of the Galena Signal Oil Company and active in other Standard oil properties.

Paul G. Cheatham, sales representative of the Baldwin Locomotive Works and the Standard Steel Works at St. Louis, Mo., has been transferred to the Chicago office, succeeding **A. S. Goble,** whose appointment as southwestern district representative, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of July 5. Mr. Cheatham's transfer was effective October 1.

William C. Curd, contracting engineer in the railroad department of Layne & Bowler Company, Memphis, Tenn., has resigned to enter the service of the William Graver Tank Works in its railroad department, with headquarters at Chicago. Mr. Curd was born at Somerset, Ky., on May 28, 1880. He was educated at Purdue University, and after completing his junior year in 1902, he entered the service of the Cincinnati, New Orleans & Texas Pacific, now a part of the Southern, with which road he was engaged on construction work. Later he was engaged on similar work on the Louisville & Nashville and the Union Pacific. In 1905 he was appointed engineer maintenance of way on the Macon, Dublin & Savannah, at Macon, Ga. The following year he went with the Missouri Pacific as assistant engineer on maintenance work, with headquarters at St. Louis, Mo., and subsequently became drainage engineer in charge of water supply, water treatment and flood and river protection. He remained in the employ of the Missouri Pacific until 1917, when he resigned to go with the Layne & Bowler Company, as contracting engineer, at Memphis, Tenn.

W. C. Curd

Trade Publications

HYDRATED LIME IN CONCRETE.—The Hydrated Lime Bureau of the National Lime Manufacturers' Association, Pittsburgh, Pa., has issued a four-page leaflet of information on the use of hydrated lime in concrete. This includes a statement of its physical properties, the manner of handling and storing, the quantities to be used, the method of incorporating, etc.

TRACK WORK.—The Morden Frog & Crossing Company, Chicago, has issued a new general catalogue of 231 pages assembled on the loose leaf system. This contains full page illustrations of all the various designs of frogs, switches, crossings, switch stands, compromise joints, etc., manufactured by this company for use on steam roads, electric railways, elevated and subway lines and narrow gage industrial railways. The last 10 pages are devoted to tables of data used by engineers in switch work and to a table of dimensions for tee-rails of all sections now in use between the weights of 56 and 136 lb. per yd.

PIPE CORROSION.—A paper entitled The Preservation of Hot Water Supply Pipe in Theory and Practice, presented by F. N. Speller and R. G. Knowlands at the annual meeting of the American Society of Heating and Ventilating Engineers and published in the journal of that society, has been reprinted in a 24-page booklet by the National Tube Company, Pittsburgh, Pa. This is a treatise on the subject of pipe corrosion and of the factors controlling it, and the broad, simple principles applying to every case of corrosion are briefly discussed, with particular reference to hot water supply systems. The discussion of the paper at the meeting is included, and the text is illustrated with several sketches and photographs.

Railway Financial News

ALABAMA, TENNESSEE & NORTHERN.—Incorporation and charter papers were filed in the probate court of Mobile county, Ala., on October 12, organizing the Alabama, Tennessee & Northern Railroad Corporation. The new company, which has a capitalization of $2,500,000 in common stock and $1,700,000 in preferred stock, will take over the property of the Alabama, Tennessee & Northern Railway, which has been in the hands of receivers. The incorporators of the new company are: John T. Cochrane, Mobile, Ala.; George C. Van Tuyl, Jr., president of the Metropolitan Trust Company, New York; Louis V. Bright, president of the Lawyers Title & Trust Company, New York; H. A. Smith, president of the National Insurance Company, Hartford, Conn., and K. R. Guthrie, J. A. Caviezel and E. A. Carstens of Mobile. These were men also selected directors of the company. John T. Cochrane, who has been receiver and chief operating officer, was elected president; Louis V. Bright was elected vice-president; E. A. Carstens, secretary, and K. R. Guthrie, who has been assistant to the receiver and treasurer under the receivership, was elected treasurer and appointed assistant to the president. Practically all of the other officers under the old organization have been retained. The new corporation has taken over about 200 miles of railroad and extensive terminal properties in Mobile owned by the old company. The company has been in the hands of receivers since November 22, 1915.

ARKANSAS, OKLAHOMA & WESTERN.—See Kansas City & Memphis.

BALTIMORE & OHIO.—The $22,500,000 three-month notes of this company which matured October 1 have been extended for four months. See item under Doings of the United States Railroad Administration in our last week's issue, page 659.

BOSTON & MAINE.—President Hudson is sending the following circular to the stockholders. "My attention has been called by several stockholders to a printed circular, dated September 28, 1918, addressed to the stockholders and appearing to be issued by Edward Brown, president of the Minority Stockholders' Protective Association, and asking stockholders to send to that association $1 a share on their holdings of stock to facilitate the financing by the United States Government of a reorganization of the railroad. The wording of the circular is such that some stockholders have assumed that it was issued by authority or with the knowledge and acquiescence of the officers of the Boston & Maine. Such is not the fact. No officer of this road is in any way responsible for this circular. On the contrary, they do not consider that the proposed reorganization, which has been handled, not by the Minority Stockholders' Protective Association, but by the reorganization committee appointed by the Boston & Maine and its largest leased lines, will be facilitated in any way by the contribution asked for in this circular, nor do they regard any such contribution by the stockholders as at all necessary for the protection of their interests."

CINCINNATI, FINDLAY & FORT WAYNE.—Judge Hollister in the United States District Court at Cincinnati, O., has ordered the foreclosure of a mortgage of the New York Trust Company of New York against this road and sale of the property at Findlay, O., on or about November 15.

KANSAS CITY & MEMPHIS.—This road was sold for $275,000 at public sale to the bondholders' protective committee of the Arkansas, Oklahoma & Western Railroad, who hold first lien on the property, amounting to $375,000. The Kansas City & Memphis, which operates 56 miles of line between Rogers, Ark., and Monte, Nev., has been in the hands of receivers since July 18, 1914.

EXPORTS OF MERCHANDISE from the port of New York during the month of July, 1918, included steam locomotives valued at $1,485,375, and steel rails valued at $340,815.—*Bulletin of the National City Bank of New York.*

Railway Officers

Railroad Administration

Federal and General Managers

W. L. Seddon, general manager of the Seaboard Air Line, has been appointed also general manager of the Macon, Dublin & Savannah, with office at Norfolk, Va.

W. G. Bierd, federal manager of the Chicago & Alton, the Peoria & Pekin Union and the Peoria Railway Terminal has had his jurisdiction extended over the Joliet Union Depot, effective October 11.

The jurisdiction of **J. M. Hannaford,** federal manager of the Northern Pacific and the Camas Prairie, has been extended over the Big Fork & International Falls, and the Minnesota & International, effective October 10.

R. V. Taylor, federal manager of the Mobile & Ohio, the Southern Railway in Mississippi, and the Delta Southern, has been appointed federal manager also of the Meridian & Memphis, with office at Mobile, Ala.

E. F. Blomeyer, vice-president and general manager of the Ann Arbor, with headquarters at Toledo, Ohio, has been appointed general manager in charge of operation, with the same headquarters, effective October 1.

C. E. Johnston, general manager of the Kansas City Southern, with headquarters at Kansas City, Mo., has had his jurisdiction extended over the Missouri & North Arkansas, with the same headquarters, effective October 1.

W. J. Harahan, federal manager of the Seaboard Air Line, the Macon, Dublin & Savannah, and the Durham & Southern, has been appointed federal manager also of the Georgia, Florida & Alabama, and the Bennettsville & Cheraw, with office at Norfolk, Va.

C. M. Kittle, federal manager of the Illinois Central, the Yazoo & Mississippi Valley, the Gulf & Ship Island, the Mississippi Central, the New Orleans Great Northern, the St. Charles Air Line, and the Helena Terminal (at Helena, Ark.), has been appointed federal manager also of the Chicago, Memphis & Gulf, with office at Chicago.

A. Robertson, federal manager of the Missouri Pacific, the St. Louis-Southwestern, lines north of Texas, the Louisiana & Arkansas, the Southern Illinois & Missouri Bridge, and the Arkansas Central, with headquarters at St. Louis, Mo., has had his jurisdiction extended over the Natchez & Southern and the Natchez & Louisiana Railroad Transfer, effective October 3.

Operating

W. W. Varney, trainmaster on the Pennsylvania Railroad, western lines, with headquarters at Zanesville, Ohio, has been appointed inspector of transportation, with the same headquarters.

J. A. Streyer, superintendent of the Seaboard Air Line, and general manager of the Macon, Dublin & Savannah, is now superintendent of the Seaboard Air Line and assistant general manager of the Macon, Dublin & Savannah.

J. C. Grisinger, inspector of transportation on the Chicago, Burlington & Quincy, with headquarters at Chicago, has been appointed superintendent of the Sterling division, with headquarters at Sterling, Colo., succeeding **J. T. McShane,** resigned, effective October 9.

L. B. McDonald, superintendent of the El Paso division of the Southern Pacific, Texas lines, with headquarters at El Paso, Tex., has been transferred to the Houston division, with headquarters at San Antonio, Tex., succeeding **R. C. Watkins,** assigned to other duties. **E. A. O'Donnell,** superintendent of the Houston Terminals, with headquarters at Houston, Tex., succeeds Mr. McDonald. **A. L. Kuykendall,** assistant superintendent at Jacksonville, Tex., has been appointed superintendent of the Houston Terminals, succeeding Mr. O'Donnell.

Lewis K. Marr, trainmaster of the New York Terminal of the Pennsylvania Railroad, has been appointed assistant superintendent of the Philadelphia Terminal division, with headquarters at Philadelphia, Pa. He was born on September 2, 1869, at Rising Sun, Md., and was educated in the common country schools. In September, 1887, he entered the service of the Pennsylvania Railroad as a telegraph operator on the Central division, and in April, 1891, left that service. On March 13, 1893, he returned to the service of the Pennsylvania as a telegraph operator on the Philadelphia division. The following year he was appointed leverman on the D. E. & K. division, and in February, 1896, was appointed assistant train director of the Philadelphia Terminal division. In January, 1903, he was promoted to train director and subsequently served consecutively as yard master and general yard master on the same division. On November 27, 1910, he was transferred as general yard master to the New York Terminal and since November, 1911, served as trainmaster on the same division until his recent appointment as assistant superintendent of the Philadelphia Terminal division as above noted.

L. K. Marr

Financial, Legal and Accounting

The title of **Joseph W. Coxe,** general auditor of the Norfolk & Western, with office at Roanoke, Va., has been changed to federal auditor.

E. Marvin Underwood, general solicitor of the Seaboard Air Line, has been appointed also general solicitor of the Macon, Dublin & Savannah, with office at Norfolk, Va.

J. R. Frink, secretary, treasurer and purchasing agent of the Macon, Dublin & Savannah, with office at Macon, Ga., has been appointed acting federal treasurer and purchasing agent, with office at Macon.

L. O. Heintz, auditor of freight and passenger accounts of the Missouri & North Arkansas, has been appointed auditor and **R. E. Dunn,** cashier, has been appointed acting federal treasurer, with headquarters at Harrison, Ark.

S. W. Moore, general solicitor, and L. J. Hensley, general auditor of the Kansas City Southern, with headquarters at Kansas City, Mo., have had their jurisdiction extended over the Missouri & North Arkansas, with the same headquarters, effective October 1.

W. J. Turck, assistant auditor of the Boston & Albany, with office at Boston, Mass., has been appointed auditor, in place of **W. S. Trowbridge,** resigned to accept service elsewhere, and **L. H. Hilton** has been appointed assistant auditor, in place of Mr. Turck.

J. O. Talbott, acting federal auditor of the Pere Marquette, the Ann Arbor, the Detroit & Toledo Shore Line, the Fort Street Union Depot Railroad, the Lake Michigan Car Ferry Association, the Grand Trunk Western Lines, the Detroit & Mackinac, the Detroit, Bay City & Western, the Port Huron Southern, and the Port Huron & Detroit, has been appointed federal auditor of the same roads, with office at Detroit, Mich.

Traffic

M. V. Mahoney, general freight and passenger agent of the Wrightsville & Tennille, has been appointed freight and passenger service agent, with office at Dublin, Ga.

H. A. Jordan has been appointed freight and passenger service agent of the Louisville & Wadley, the Sylvania Central, and the Wadley Southern, with office at Wadley, Ga.

E. B. Carson, general baggage agent of the Southern Pacific at San Francisco, Cal., has had his jurisdiction extended over the Western Pacific, the Tidewater Southern and the Deep Creek, with the same headquarters.

J. F. Holden, traffic manager of the Kansas City Southern and the Kansas City, Mexico & Orient, with headquarters at Kansas City, Mo., has had his jurisdiction extended over the Missouri & North Arkansas, with the same headquarters, effective October 1.

F. J. Robinson, general passenger agent of the Central of Georgia, with office at Savannah, Ga., has assumed jurisdiction over the passenger traffic departments of the Louisville & Wadley, the Sylvania Central, the Wadley Southern, and the Wrightsville & Tennille.

F. E. Batturs, general passenger agent of the Southern Pacific, at San Francisco, Cal., has been appointed assistant passenger traffic manager of that road south of Ashland, Ore., the Western Pacific, the Tidewater Southern and the Deep Creek, with the same headquarters.

C. H. Jasper, assistant agent at the San Francisco (Cal.) freight station of the Southern Pacific, has been appointed division freight and passenger agent on the Southern Pacific, lines south of Ashland, Ore., with headquarters at Fresno, Cal., succeeding **C. L. McFaul,** assigned to other duties.

George R. Angell, commercial agent of the Chicago, Rock Island & Gulf, with office at Dallas, Texas, has been appointed division freight agent, with headquarters at Dallas, and **B. D. Shropshire, Jr.,** commercial agent at Fort Worth, has been appointed division freight agent, with headquarters at Fort Worth.

O. A. Constans, freight traffic manager of the Baltimore & Ohio, western lines, with headquarters at Chicago, has been appointed assistant freight traffic manager. **S. T. McLaughlin,** assistant freight traffic manager, at Cincinnati, Ohio, has been appointed assistant to the traffic manager, and **Edward Hart, Jr.,** western general freight agent at St. Louis, Mo., has been appointed assistant general freight agent.

H. K. Faye, traffic manager of the Western Pacific, with headquarters at San Francisco, Cal., has been appointed general freight and passenger agent of that road, the Tidewater Southern and the Deep Creek. **Bode K. Smith,** general passenger agent of the Western Pacific, has been appointed assistant general passenger agent of that road, the Tidewater Southern and the Deep Creek, with headquarters at San Francisco, Cal.

The following officers of the Southern Railroad System have had their authority extended over the Baltimore & Ohio (segregated line between Harrisburg and Lexington, Va.); **W. H. Tayloe,** assistant traffic manager-passenger, with headquarters at Washington, D. C.; **H. F. Cary,** general passenger agent, with headquarters at Washington; **W. H. Paxton,** general freight agent, with office at Atlanta, Ga., and **J. H. Drake,** general freight agent, with office at Richmond, Va.

The jurisdiction of the following officers of the Philadelphia & Reading, the Central of New Jersey, the New York & Long Branch, the Atlantic City Railroad and the Port Reading Railroad has been extended over the Staten Island Rapid Transit Railroad, the Staten Island Railroad, the Baltimore & New York, and the Baltimore & Ohio properties and piers on Manhattan Island: **J. F. Auch,** freight traffic manager; **W. C. Hope,** passenger traffic manager; **A. B. Bierck,** general auditor; **J. S. Sneyd,** federal treasurer; **W. L. Kinter,** general solicitor; **C. B. Williams,** purchasing agent; all with headquarters at Philadelphia, Pa., except W. C. Hope, who is at New York.

Engineering and Rolling Stock

R. E. Jones has been appointed fuel and oil supervisor of the Duluth & Iron Range and the Duluth, Missabe & Northern.

G. F. McCormack has been appointed assistant division engineer of the Sacramento division of the Southern Pacific lines south of Ashland, with headquarters at Sacramento, Cal.

A. A. Miller, engineer maintenance of way on the Missouri Pacific, at Little Rock, Ark., has been appointed district engineer, succeeding **J. R. Leighty** at Kansas City, Mo., and the title of engineer maintenance of way has been changed to district engineer; **J. A. Lahmer,** drainage engineer at St. Louis, Mo., succeeds Mr. Miller as district engineer at Little Rock; **W. M. Neptune,** assistant engineer at St. Louis, has been appointed principal assistant engineer, succeeding Mr. Lahmer; Mr. Neptune will have charge of water service drainage, flood and river protection, with headquarters at St. Louis.

E. Hanson, signal supervisor on the Atchison, Topeka & Santa Fe and the Gulf, Colorado & Santa Fe, with office at Galveston, Texas, has been appointed signal engineer of the Gulf, Colorado & Santa Fe, the St. Louis, San Francisco & Texas, the Fort Worth & Rio Grande, the Brownwood North & South, the Texas Midland, the International & Great Northern (from Spring to Ft. Worth & Madisonville branch), the Fort Worth Belt Railroad, the Houston Belt & Terminal Railroad, the Missouri, Kansas & Texas of Texas, the Wichita Falls & Northwestern, the Fort Worth & Denver City, the Wichita Valley, the Houston & Texas Central, the Abilene & Southern, the Fort Worth Union Passenger Station, and the Union Terminal of Dallas, with headquarters at Galveson.

Corporate

Executive, Financial, Legal and Accounting

D. R. Carpenter has been appointed claim agent and secretary, of the Tennessee Central, succeeding **H. C. Lassing,** claim agent at Nashville, Tenn.

G. R. Martin, vice-president of the Great Northern, at St. Paul, Minn., has been elected also president of the Lake Superior Terminal & Transfer Railway Company.

Arthur T. Foss, controller of the Maine Central and the Portland Terminal Company, has been elected treasurer of these roads and controller and treasurer of the Rangeley Lake and the Bridgton & Saco River, with headquarters at Portland, Me.

C. S. Smith has been elected secretary and treasurer of the Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific, with headquarters at New Orleans, succeeding Udolpho Wolfe, who is now local treasurer of these roads under federal control.

J. C. Otteson, vice-president, secretary and assistant treasurer of the Wabash, with headquarters at New York has also been elected treasurer, succeeding **F. L. O'Leary,** whose headquarters were at St. Louis, Mo. **O. Brewer** has been appointed assistant secretary and **H. Rogers Winthrop** has been elected vice-president.

W. G. Brantley has been elected president and general counsel of the Atlanta, Birmingham & Atlantic, with headquarters at Washington, D. C. **E. T. Lamb,** former president, is now federal manager. **J. M. Caldwell** has been elected secretary and treasurer, with headquarters at Atlanta, Ga., succeeding **Floyd K. Mays,** now assistant federal manager.

Louis C. Fritch, formerly general manager of the Seaboard Air Line, with office at Norfolk, Va., and more recently a consulting engineer, with office in the Peoples' Gas building, Chicago, has been elected vice-president and corporate engineer for both the Chicago, Rock Island & Pacific, and the Minneapolis & St. Louis, with headquarters at Chicago.

John T. Cochrane, receiver and chief operating officer of the Alabama, Tennessee & Northern, with headquarters at Mobile, Ala., has been elected president. **Louis V. Bright** has been elected vice-president, and **E. A. Carstens,** secretary, with headquarters at Mobile. **K. R. Guthrie,** assistant to the receiver and treasurer, has been elected treasurer and ap-

pointed assistant to the president, with office at Mobile.

Blewett Lee, general solicitor of the Illinois Central at New Orleans, La., has been appoined general counsel, with headquarters at New York, and **L. A. Harkness,** assistant controller at Chicago, has been appointed controller, with the same headquarters, succeeding **W. D. Beymer,** now federal auditor.

L. F. Loree, chairman of the board of directors of the Kansas City Southern, with headquarters at New York, has been elected president, succeeding **J. A. Edson,** now federal manager. **G. C. Hand,** vice-president and secretary has also been elected treasurer, succeeding **H. Visscher,** who is now local treasurer; **D. W. Leitch** has been appointed transfer agent and assistant secretary. **J. J. Weiss** has been appointed assistant treasurer, succeeding **I. C. McGee,** who is now assistant treasurer under federal control. **A. H. Barnes** has been appointed auditor, succeeding **L. J. Hensley,** who is now general auditor under federal control. **J. M. Souby** has been appointed solicitor and assistant secretary, and **H. H. Hoar** has been appointed assistant treasurer. Messrs. Barnes, Souby and Hoar will have their headquarters at Kansas City, Mo. The other officers mentioned have their headquarters at New York City.

F. H. Davis, vice-president and treasurer of the Chicago & Alton and the Minneapolis & St. Louis, with headquarters at New York, has also been elected vice-president of the Chesapeake & Ohio, the Chesapeake & Ohio of Indiana and the Hocking Valley. **A. Trevvett,** assistant secretary, at Richmond, Va., has been elected secretary of these roads, succeeding **Carl Remington,** who has been appointed assistant secretary. **H. F. Lohmeyer** has also been appointed assistant secretary. **A. C. Rearick,** general attorney of the Chesapeake & Ohio and the Chesapeake & Ohio of Indiana, has been appointed general counsel of these roads and general attorney of the Hocking Valley, succeeding **H. T. Wickham,** formerly vice-president and general counsel of the Chesapeake & Ohio, the Chesapeake & Ohio of Indiana, and the Hocking Valley. The above officers have their headquarters at New York. **W. S. Bronson,** assistant general counsel, has also been appointed assistant secretary of the Chesapeake & Ohio, and the Chesapeake & Ohio of Indiana and assistant general attorney of the Hocking Valley, with headquarters at Richmond, Va. **W. N. Cott,** assistant secretary and assistant treasurer of the Hocking Valley, has been appointed assistant secretary of that road, with headquarters at Columbus, Ohio.

Engineering and Rolling Stock

J. R. Leighty, whose appointment as corporate chief engineer of the Missouri Pacific, was announced in the *Railway Age* of October 4, was born at Spencerville, Ind., on September 16, 1870. He graduated from Rose Polytechnic Institute in 1891 and then entered the service of the Wisconsin Central, now a part of the Minneapolis, St. Paul & Sault Ste. Marie, as a freight bill clerk. A few months later he went with the Chicago & North Western as a rodman, and subsequently became instrument man and assistant engineer. As assistant engineer, Mr. Leighty had charge of construction work in the Wood street (Chicago) yard and of the track work in connection with track elevation on the Rockwell street branch to 43rd street, Chicago. Later he became roadmaster at Sparta, Wis., and at Carroll, Iowa. In 1889, he went to the Union Pacific and was assigned to duties in connection with track reconstruction and ballasting work in Wyoming. The following year he entered the service of the Baltimore & Ohio, as an assistant engineer in division engineer's office at Newark, Ohio. Later he served in the same capacity at Winchester, Va., Parkersburg, W. Va., and Cumberland, Md. In 1907 he was appointed engineer maintenance of way on the Western District of the Missouri Pacific with office at Kansas City, Mo., which position he held until his appointment as chief engineer of the corporation, as mentioned above.

J. R. Leighty

D. J. Brumley, valuation engineer of the Illinois Central at Chicago, has been appointed chief corporate engineer.

Railway Officers in Government Service

Frank E. Webster, assistant general freight agent on the Chicago & Eastern Illinois, with headquarters at Chicago, has been appointed assistant traffic director, Inland Traffic Service, Forage Branch, with the same headquarters.

Obituary

Daniel D. Schenck, president of the Toledo & Indiana, with headquarters at Toledo, Ohio, died on October 12.

J. C. Nelson, engineer maintenance of way of the Seaboard Air Line, with office at Norfolk, Va., died on October 6 of pneumonia, at Norfolk, Va.

Lieutenant Hurst V. Campbell, in military service, died at Baltimore, Md., on October 7. Mr. Campbell was formerly traveling freight agent of the Missouri, Kansas & Texas, at Detroit, Mich.

Randall Clifton, chairman of the southern freight traffic committee, with headquarters at Atlanta, Ga., and traffic manager of the Southern Railway, died on October 12, in that city.

Hiram W. Belnap, manager of the safety section of the division of operation, United States Railroad Administration, and formerly for seven years chief of the Bureau of Safety of the Interstate Commerce Commission, died at his home in Washington on October 12, of pneumonia, following an attack of the Spanish influenza. Mr. Belnap was 51 years of age and had been connected with the Interstate Commerce Commission for 15 years. For eight years he was an inspector of safety appliances for the commission and in 1911 he was made chief inspector of safety appliances, his title having been changed later to chief of the Bureau of Safety. Previous to his connection with the commission he had 14 years of experience in various capacities in practical railroad service in train operation. He was appointed manager of the safety section under the Railroad Administration last February and for a time continued to exercise his usual functions with the Interstate Commerce Commission, but on July 1 he resigned his office with the commission to devote his entire time to the new work, in which he has been engaged in supervising and organizing the safety departments of the railroads in accordance with a uniform plan designed to provide centralized supervision, not only to insure proper practices, but in order that each railroad might promptly secure the advantage of experience which other roads have had in the development of safety work.

H. W. Belnap